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THE SHEPAUG IN CONNECTICUT

A WILD AND SCENIC RIVER STUDY



U.S. DEPARTMENT OF THE INTERIOR: NATIONAL PARK SERVICE

Final Report August 1979

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U. S. DEPARTMENT OF THE INTERIOR
Cecil D. Andrus, Secretary

NATIONAL PARK SERVICE
William J. Whalen, Director



United States Department of the Interior

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Memorandum

To: All Regional Directors

From: Acting Regional Director, North Atlantic Region

Subject: Shepaug Wild and Scenic River Study

Enclosed for your information is a copy of the final report on the Shepaug Wild and Scenic River Study. This report has recently been transmitted by the President to the Congress.

In accordance with the wishes of the local communities, the report on the Shepaug proposes that the river be protected by local and state actions. The National Park Service with the cooperation of the Heritage Conservation and Recreation Service is assisting local interests to develop management plans for the river which will protect its scenic, geologic, fish and wildlife, historic, and archeologic values.

If the State of Connecticut finds it desirable at some future date to add the Shepaug to the National System, the Secretary of the Interior would consider application for such designation under provisions of Section 2(a)(ii) of Public Law 90-542, the National Wild and Scenic Rivers Act.


Richard W. Marks

Enclosure

FINAL REPORT

SHEPAUG RIVER

A WILD AND SCENIC RIVER STUDY

CONNECTICUT

August 1979

Prepared by:

U.S. Department of the Interior
Heritage Conservation and Recreation Service
(formerly Bureau of Outdoor Recreation)
Northeast Regional Office

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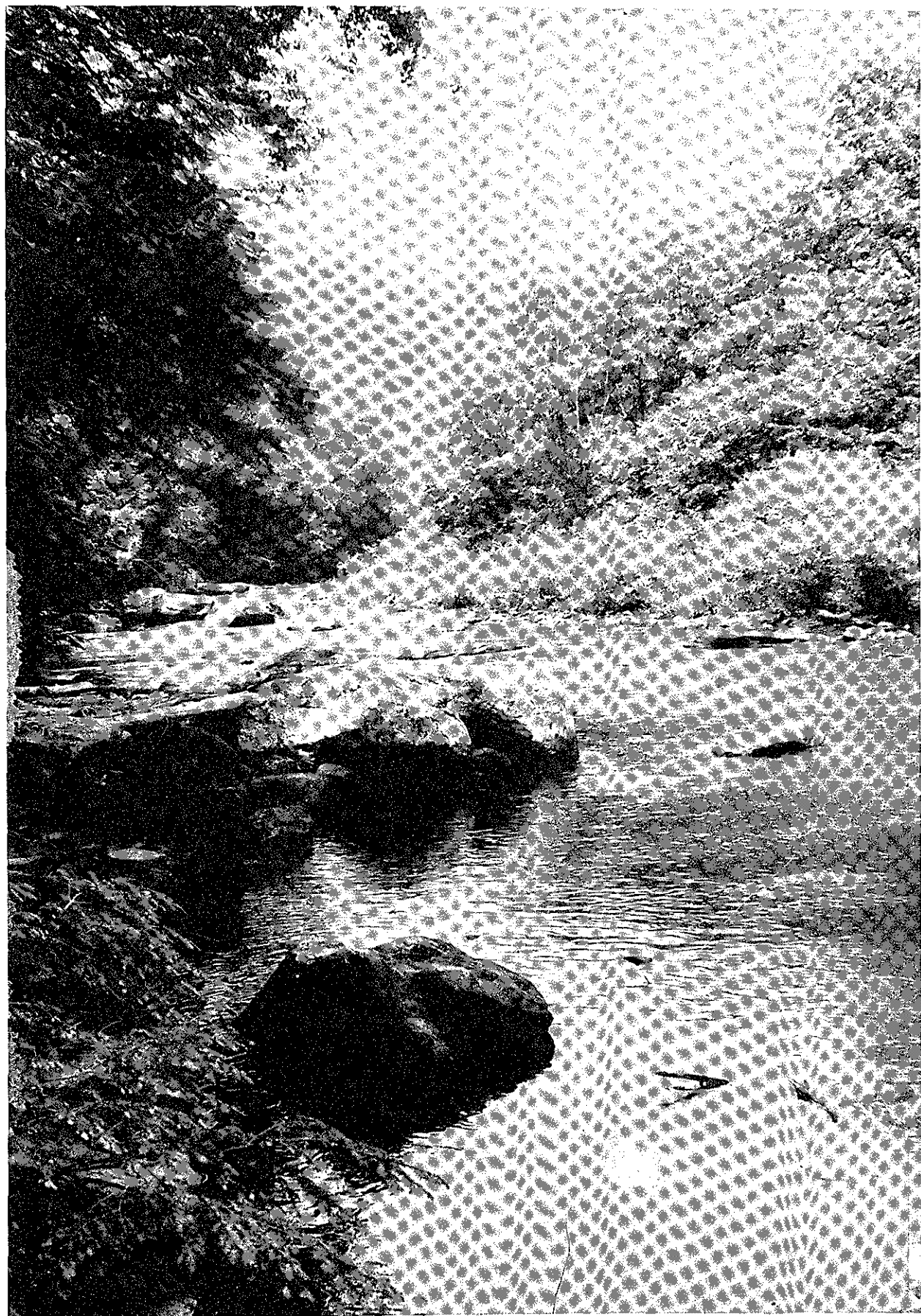
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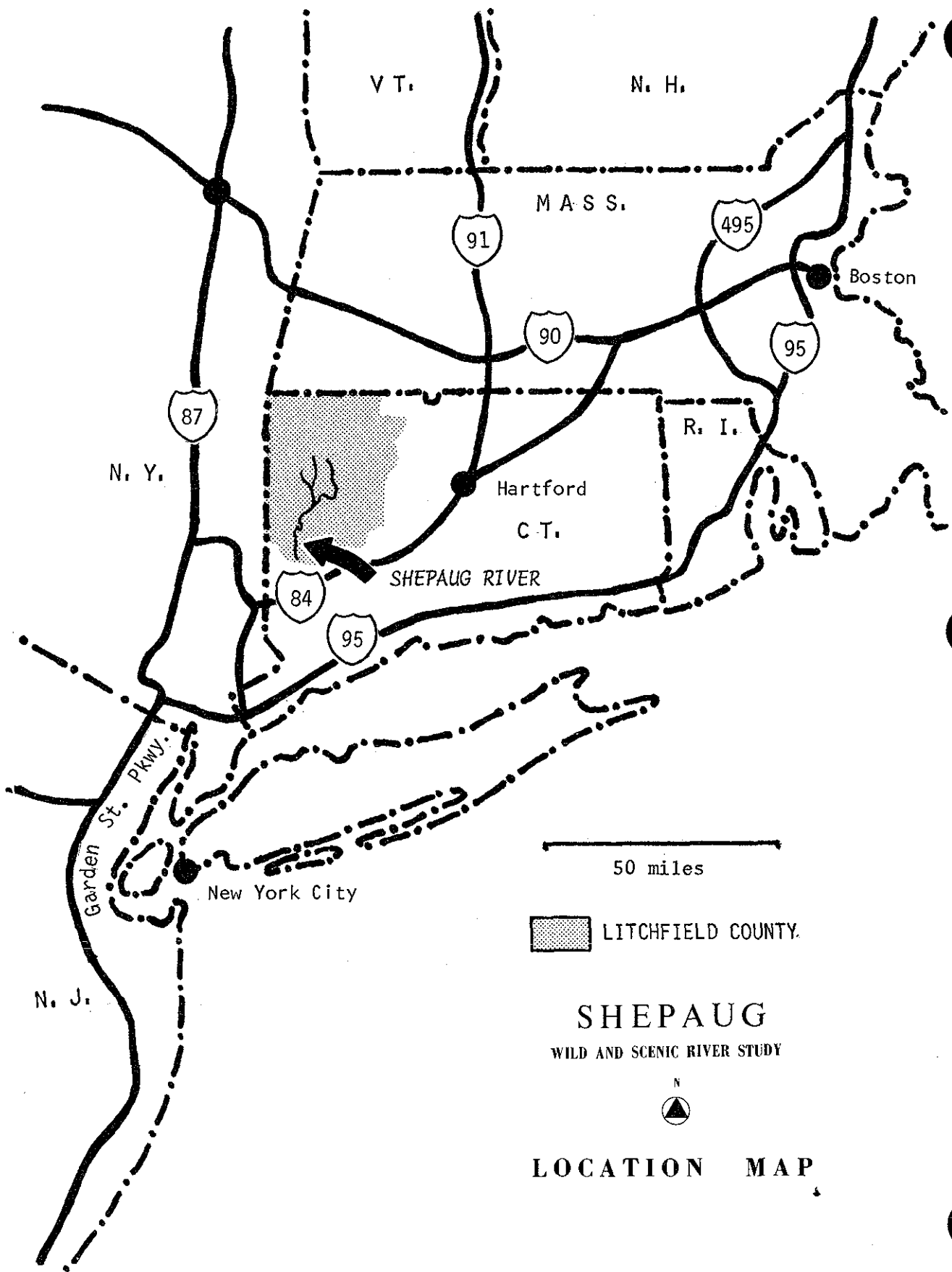
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SHEPAUG
WILD AND SCENIC RIVER STUDY

LOCATION MAP

SUMMARY

This report on the potential of the Shepaug River for inclusion in the National Wild and Scenic Rivers System was prepared under authority of the National Wild and Scenic Rivers Act of 1968, Public Law 90-542, as amended. The Act states that:

It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

The Act established the National Wild and Scenic Rivers System and prescribed methods and standards by which additional rivers could be added to the System from time to time.

In 1975 the Act was amended to designate the Shepaug River for study as a potential addition to the national system. The Act requires a determination as to whether the Shepaug and its tributaries could qualify for inclusion in the national system, and if so, recommendations pertaining to the administration and management of the river and its immediate environment.

THE STUDY PROCESS

The study of the Shepaug River was initiated in May of 1976, and since diverse points of view are sought for studies of this nature, a field study team was formed. Members include the Heritage Conservation and Recreation Service (formerly the Bureau of Outdoor Recreation), the Fish and Wildlife Service, the National Park Service, the Environmental Protection Agency, the Army Corps of Engineers, the Federal Power Commission, the U.S. Forest Service, the U.S. Geological Survey, the Soil Conservation Service, the New England River Basins Commission, and the Connecticut Department of Environmental Protection. Additional input has been provided by the Northwest Connecticut Regional Planning Agency, the Litchfield Hills Regional Planning Agency, the Litchfield County Conservation District, and other organizations and individuals.

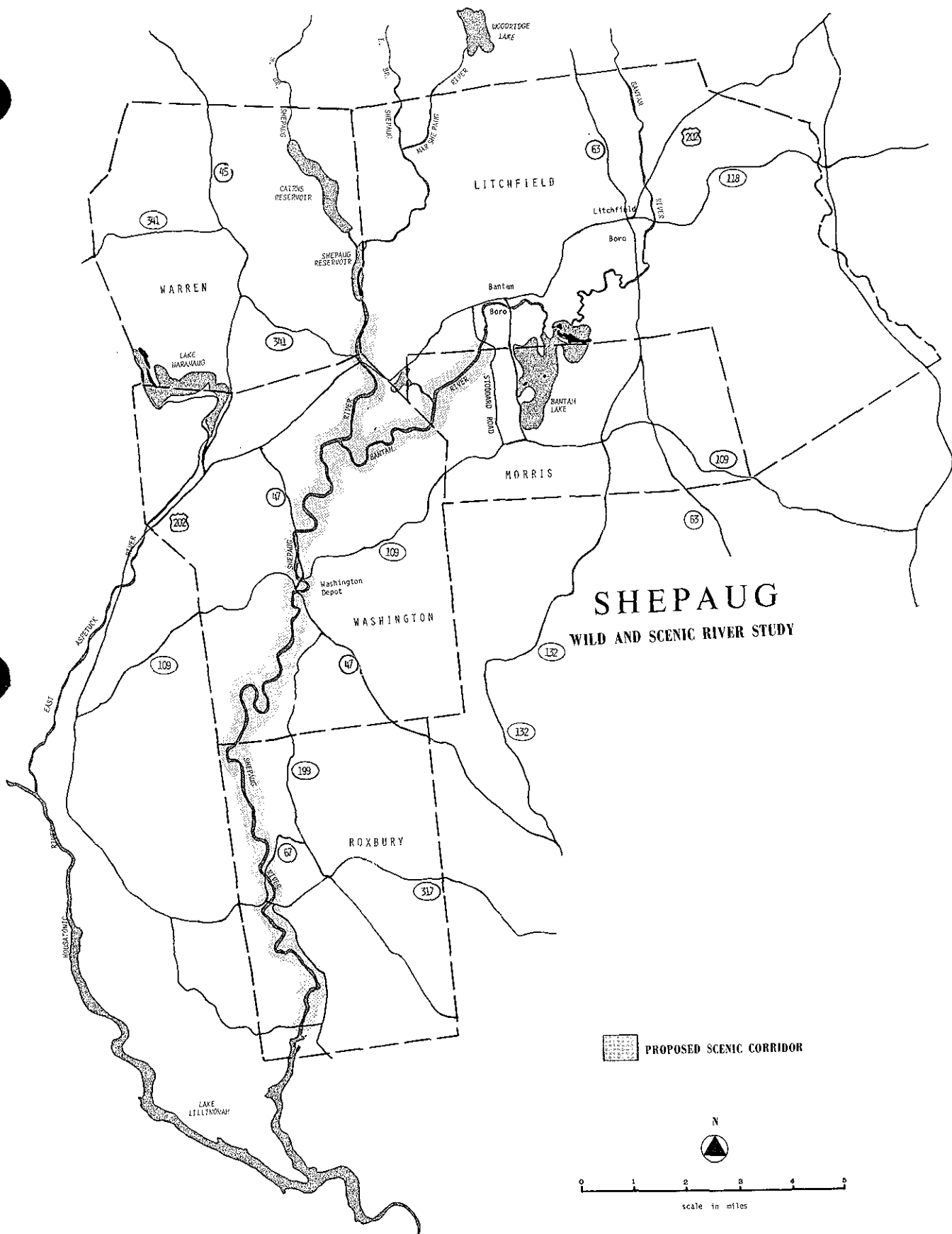
PUBLIC INVOLVEMENT

In June of 1976, public meetings were held in Hartford and Washington, Connecticut, to introduce the study to interested persons and to solicit comments. By March of 1977 the study had reached the point where it was possible to discuss tentative findings and recommendations with the public. Meetings were held in Washington, Connecticut for this purpose.

STUDY FINDINGS

During the study process, the Shepaug River and its tributaries were evaluated based on eligibility criteria outlined in the Wild and Scenic Rivers Act, and supplemented by the "Guidelines for Evaluating Wild, Scenic and Recreational River Areas Proposed for Inclusion in the National Wild and Scenic Rivers System." The criteria are not absolutes, but are written to guide the field team on which rivers are eligible and how they should be classified. While each criterion is important, their collective intent is most important. With these factors in mind, the task force has made the following determinations.

- ** The Shepaug River, downstream from the Shepaug Reservoir, and its principal tributary, the Bantam River, downstream from the Borough of Bantam, are in a substantially free flowing condition until they reach Lake Lillinonah. This free flowing segment creates a corridor approximately 26 miles in length; sufficient to provide a meaningful experience to those who would appreciate its excellent qualities.
- ** For most of its length, deep valleys with numerous rock outcroppings and heavily forested hillsides foster a sense of solitude for the visitor. Where broader flood plains alternate on either side of the Shepaug's southernmost reaches, farming interrupts the forest with pastoral settings and serves as a quiet reminder of man's ties to the soil. In a sense, the river valley may be viewed as a cameo of the natural values and charm of southern New England.
- ** Besides being rich in historical interest, the corridor has outstanding potential for yielding significant archaeological data. The Shepaug is among the very few rivers in this part of New England having deeply stratified floodplains. These undeveloped floodplains offer a unique and ideal setting for the systematic investigation of Indian cultures dating back 10,000 years.



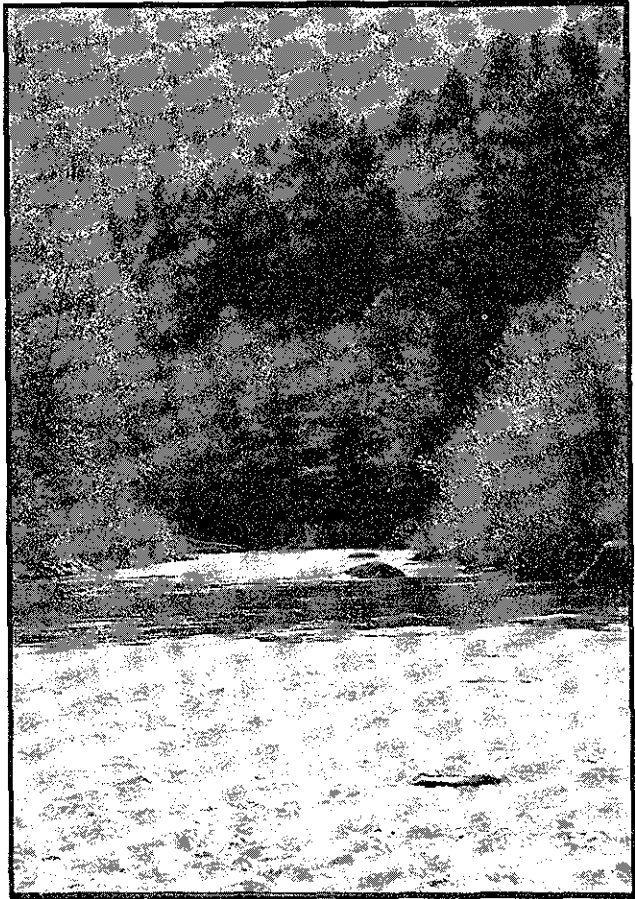
** The river corridor's relatively steep gradient cut deeply into the surrounding upland, combined with its ruggedness, variety of scenic landforms, and the relative remoteness of segments of the area, make it one of the most significant natural features of its type in the State.

** The river corridor includes a ten acre stand of 200 year old hemlock. In light of the past intensive industrial and farming activities in southern New England, the presense of this hemlock stand represents an outstanding attribute.

** There is sufficient volume of water during normal years to permit full enjoyment of water related outdoor recreation during the recreation season. It must be noted however, that boating is limited during the warm summer months when there is little stream flow.

While the relatively small size of the Shepaug River limits boating, this limitation is overshadowed by the river's exceptional natural values.

** Water quality in the Shepaug River and its tributaries is good. The Shepaug Reservoir is of sufficient quality to be used as potable water supply, and the downstream reaches are suitable for body contact recreation. In addition, the river meets the "Aesthetics -- General Criteria" of the National Technical Advisory Committee.



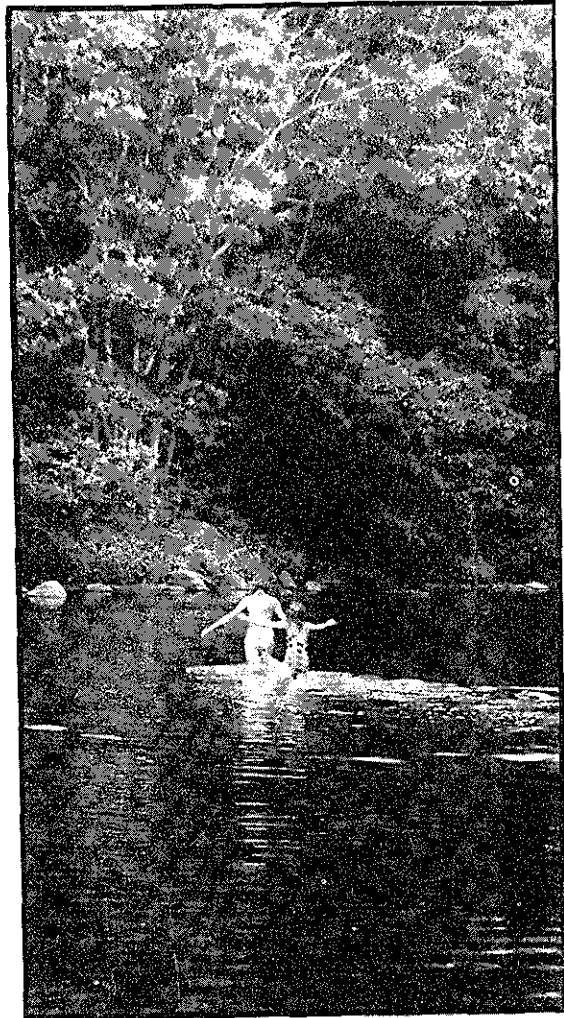
...heavily wooded hillsides foster a sense of solitude.

In summary, a 26 mile segment of the Shepaug River and its principal tributary, the Bantam River, is found to be free flowing and to have outstandingly remarkable values which qualify it for inclusion in the National Wild and Scenic Rivers System. Given its accessible, but largely undeveloped valley, the Scenic classification is appropriate.

RECOMMENDATIONS

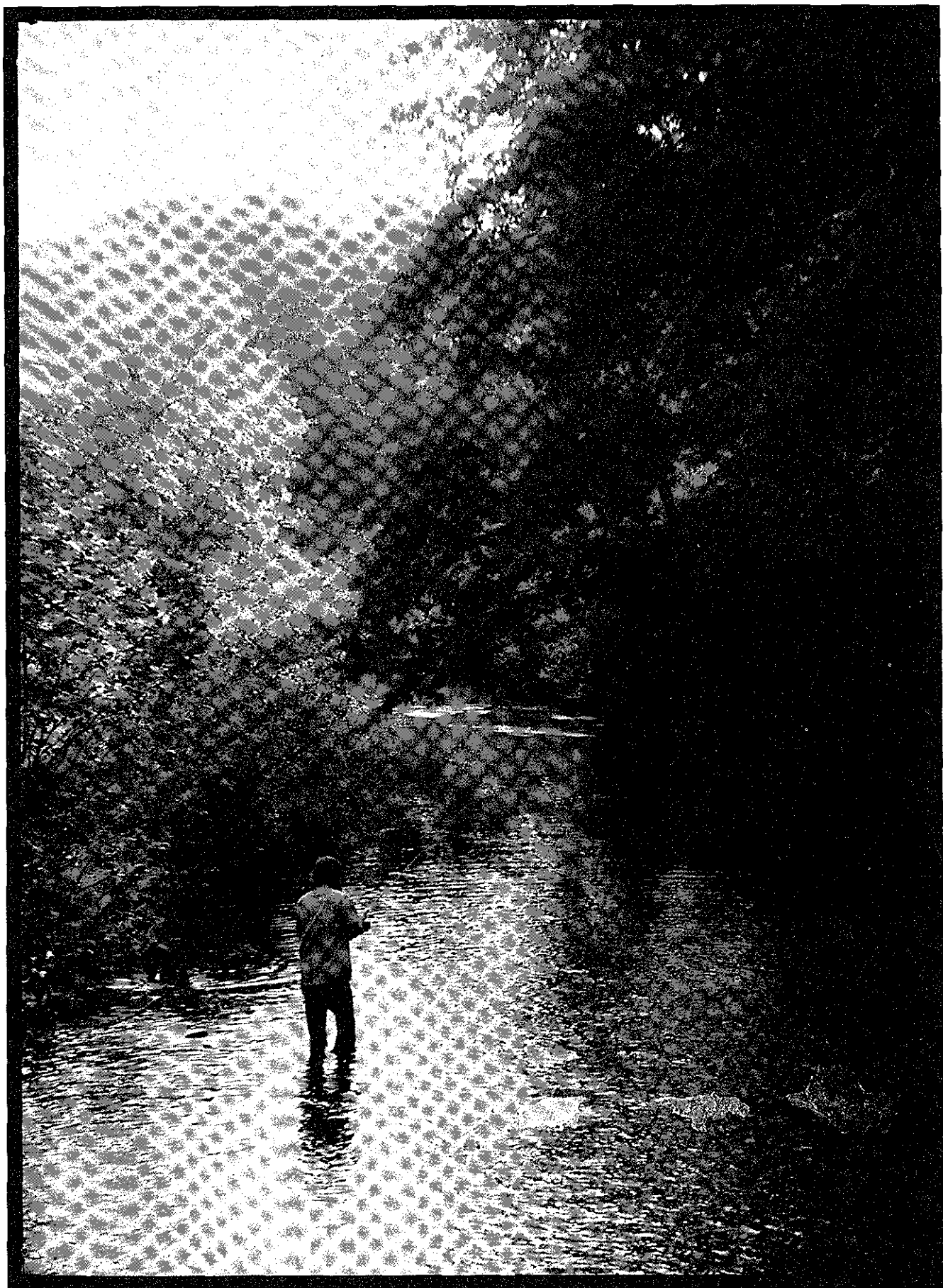
Having found that a 26 mile segment of the Shepaug and Bantam Rivers qualifies for inclusion in the Wild and Scenic Rivers System, it is important that a course of action be followed which will permanently protect its special values. To accomplish this, it is recommended that:

1. The 26 miles which qualify for inclusion be added to the National Wild and Scenic Rivers System as a state-designated unit, as provided for under Section 2(a) (ii) of the Wild and Scenic Rivers Act. This will require state legislative action.
2. The river unit be administered by a Scenic River Authority (or some similar inter-town agency), representing the towns of Roxbury, Washington, Morris, Litchfield and Warren, and having permanent responsibility for developing and implementing a comprehensive plan for conserving the river corridor.
3. The comprehensive plan be based on the conceptual plan outlined in this report, with primary emphasis being on maintaining and enhancing the scenic, historic, geologic, fish and wildlife, and archaeologic values of the river. Recreational development should be limited so as to protect those values, and citizen input should be actively sought as the plan is prepared.



*...the recreation experience
is of high quality.*

4. The Scenic River Corridor be preserved by the lawful and judicious application of land use regulations, tax incentives, and acquisition of fee title and partial interest in selected lands, and by the encouragement of voluntary development restraints by private property owners.
5. The Commissioner of the Connecticut Department of Environmental Protection provide technical assistance in the preparation of the comprehensive management plan for the Scenic River Corridor, and serve as a liaison between the corridor towns, the state legislature, and the Secretary of the Interior. The State may wish to take this opportunity to develop a protective program that could be applied to other rivers in Connecticut.



RESOURCE EVALUATION

The first important decision made in a river study is whether the river meets the eligibility criteria set forth in the Wild and Scenic Rivers Act, and supplemented by the "Guidelines" adopted by the Secretaries of the Interior and Agriculture. A determination also is made as to whether wild, scenic, or recreational classification would be appropriate.

In making determinations as to eligibility and classification, a close examination of the river and its environment is required.

REGIONAL SETTING

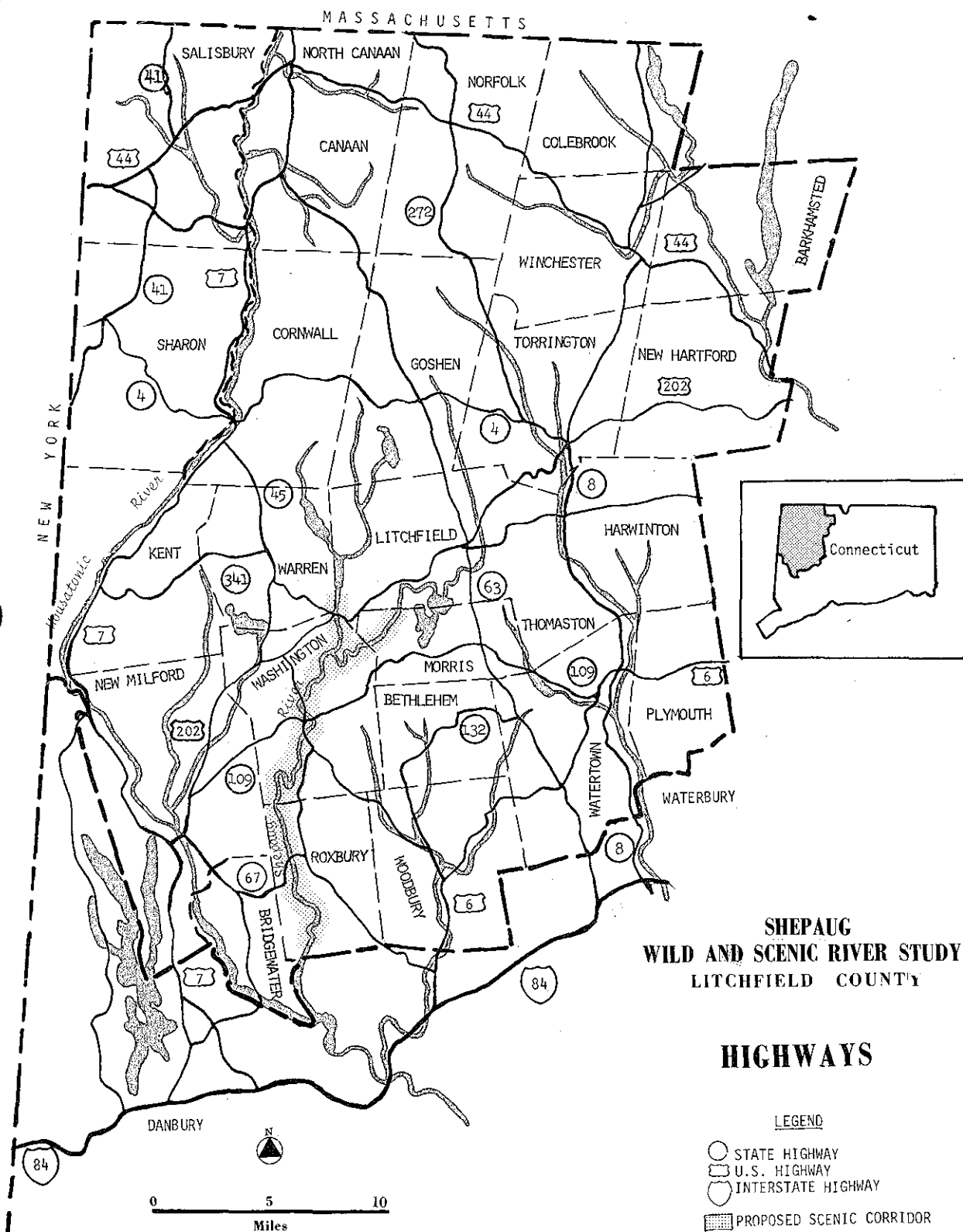
The Shepaug River and its watershed are located entirely within Litchfield County in northwestern Connecticut. As a relatively small river, it is not well known outside of the region. For this reason a general discussion of the region is presented as a frame of reference for a more detailed review of the Shepaug's immediate environment.

HISTORY AND SOCIO-ECONOMIC BACKGROUND

The first formal European settlements in the region were by Puritan colonists who traveled up the Housatonic River from the coastal areas in the late 1600's and early 1700's. These people sought to carve communities from the wilderness in which they might worship in their own way. The region at that time was thinly populated by Mohican Indians, with whom the colonists enjoyed a relatively peaceful coexistence.

As more settlers advanced on the region, motivated by religious convictions and a spirit of adventure, it began to assume a character other than that of a wilderness frontier. Its growth was substantial enough that Litchfield County was formally established in 1751. Even as a wilderness outpost, the Puritans imbued the region with a scholarly tradition. The youth of the day could expect a sound education, and institutions of the late 1700's, such as the Litchfield Female Academy and the Morris Academy, became widely renowned. Tapping Reeve established the nation's first law school in Litchfield in 1784.¹

Most of those who settled in the county were humble in their aspirations, being content with subsistence farming. Indeed, farming represented the basis for the region's early growth. By 1796 there were 283,000 acres in farms and 45,600 acres of tilled crops. In the late 1800's general farming was supplanted by poultry farming and dairying. Dairying remains important today, especially in the Shepaug Valley.²



Other people who played a role in the county's development sought their fortune from the region's mineral resources. The most important outcome of this was the development of the iron industry, which dates back to 1731. The industry became a flourishing enterprise, contributing to Connecticut's designation as the "Provision State" during the Revolution. "Salisbury" iron, forged in the region and known for its superior tensile strength, was significant in the development of the nation's railway system.

The iron industry prospered until the mid 19th century when charcoal became scarce. With changes in technology and the success of Pennsylvania and Ohio industries, Connecticut iron became prohibitively expensive. Output steadily decreased and the last furnace shut down in 1923.³

Physical remains of the iron industry are generally limited to flooded ore pits, slag heaps, and a handful of recognizable furnaces. Some efforts are being made to preserve and restore these ties with the region's past.

Quarrying marble was another industry which flourished for a period, beginning about 1800 in marble beds along the East Aspetuck River in Washington. However, by the 1850's, better quality Vermont and Italian marbles gained a competitive edge, and operations of all the quarries in the region were terminated.

The mid-1800's began a period of general economic decline throughout the region, and an out-migration of those people who sought a more promising future. In the period 1850 to 1920, the population declined twenty percent. Even now, commerce and industry thrive mostly on the fringe of the region. The cities of Waterbury and Danbury, located in adjacent counties, can more accurately be described as centers for commerce and industry. Litchfield County's undeveloped character is especially noteworthy when one considers that ten percent of the nation's population lives within 100 miles of its borders.

The socio-economic character of the county is reinforced by its highway system, which is geared primarily for intertown transportation. With the exception of Connecticut Route 8, which connects the urban centers of Waterbury and Torrington, the county lacks expressways. Interstate arteries by-pass the county to the south and east, and in New York to the west. This factor has played a large role in maintaining the county's rural character.⁴

Although there are no present plans for improving Route 7 as a major north-south expressway along the Housatonic River, the prospect of this happening has generated much controversy. If the improvements should materialize, the county's rural character would likely undergo much change.

Table 1
POPULATION TRENDS AND DENSITIES
OF CONNECTICUT COUNTIES

COUNTY	LAND AREA SQ. MILES	1974 DENSITY*	1960	1970	1974	% INCR. '60-'70	% INCR. '70-'74
<u>Litchfield</u>	930	161	119,856	144,091	149,500	20	3.8
Windham	516	172	68,572	84,515	88,900	23	5.2
Tolland	416	262	68,737	103,440	108,900	51	5.3
Middlesex	372	322	88,865	115,018	119,500	29	3.9
New London	667	360	185,745	230,654	239,800	24	4.0
Hartford	739	1,117	689,555	816,737	825,200	18	1.0
New Haven	605	1,264	660,315	744,948	764,100	13	2.6
Fairfield	627	1,317	653,589	792,814	825,100	21	4.1
STATE TOTAL	4,872	641	2,535,234	3,032,217	3,121,000	20	2.9

* per square mile

Source: Connecticut Market Data, 1976, Conn. Dept. of Commerce

PHYSICAL ENVIRONMENT

Litchfield County lies wholly within the New England Physiographic Province, and occupies parts of two sections: (1) the New England Upland section and (2) the Taconic section with adjoining limestone valley. In addition, a small island-like area that is similar to the Connecticut lowland section occurs at the south-central edge of the county. Collectively, the area covered by the county is known as the Western Highlands.

Within the Western Highlands there is considerable variation in relief. The New England Upland section ranges from gently sloping and hilly in the southern part of the county, to hilly and steep in the north. Crest elevations range from 500 feet in New Milford to 1,350 feet in Goshen. To the north the Canaan Mountain rises to a height of about 1,750 feet.

The Taconic section is in the northwestern corner of the county and lies high above the floor of a limestone valley. This plateau-like section has elevations ranging about 900 to 2,300 feet.²

Most of the county is underlain by a complex of metamorphic rocks. The rocks, some more than a half billion years old, have been subjected to the heat and pressure of mountain building. They are greatly changed since their deposition as mud, silt, sand, lime, or volcanic material. Foliation has developed as micas and other platy minerals grew along preferred directions in response to heat and pressure. The resulting metamorphic rocks are schist and gneiss.

Prominent in Pomperaug Valley is a basin of red-bedded sedimentary rocks with intervening traprock. Because traprock is highly desirable as a road aggregate, the trap within the basin is being utilized from several quarries.

The Geological Map of the State of Connecticut shows several local faults. Most are of academic interest and have not been active for millions of years. Rather than causing disasters, they may instead serve as local sources of ground water.⁴

Litchfield County has a humid, continental climate maintained by prevailing westerly winds which blow from the southwest in summer, but from northwest during other periods of the year. Because the county is located near principal storm tracks, the weather frequently changes from day to day as air flows alternately from northern and southern regions. The weather is seldom excessively hot, and prolonged periods of extreme cold are rare. The mean temperature averages about 70° in July and 24° in January.

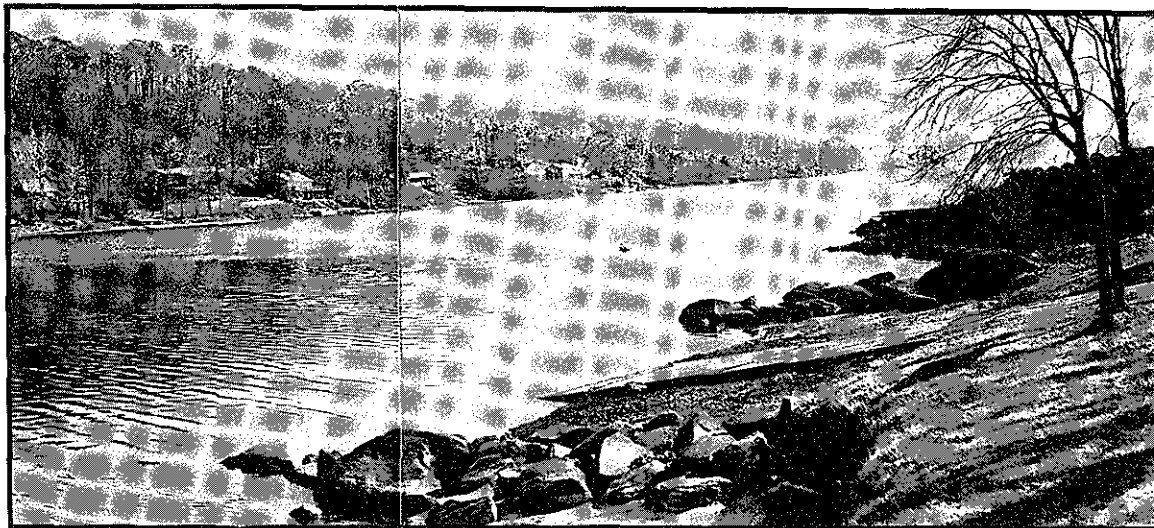
Rainfall is plentiful in the county, with an average yearly amount ranging from 44 to 52 inches. The precipitation is well distributed throughout the year, and its abundance assures that water will be available during the fairly common, though rarely prolonged dry spells that occur in the summer months.

The average seasonal snowfall is between 40 and 50 inches in the southern part of the county and between 50 and 100 inches in the northern part. Significant snowfall occurs from mid-November to mid-April during most winters.²

The percentage of annual precipitation contributing to run-off is generally highest in the upper region, but seasonal run-off characteristics are similar throughout, with about 50 percent occurring in the months of March through May and the remainder rather uniformly distributed throughout the year.

Litchfield County's humid climate lends itself to an abundant supply of surface waters. There are two major river basins within the county: the Housatonic River and its tributaries, including the Naugatuck, Shepaug, Pomperaug and Still Rivers, and the Farmington River System. The county's principal rivers are shown on page 14.

Lakes and ponds, both natural in origin and man-made, are plentiful in western Connecticut. Bantam Lake, in the Shepaug's watershed, has a water surface area of 916 acres, and is the largest natural lake in the state. Candlewood Lake, with a water surface of 5,420 acres is the state's largest man-made lake.



...State boat launch site on Candlewood Lake.

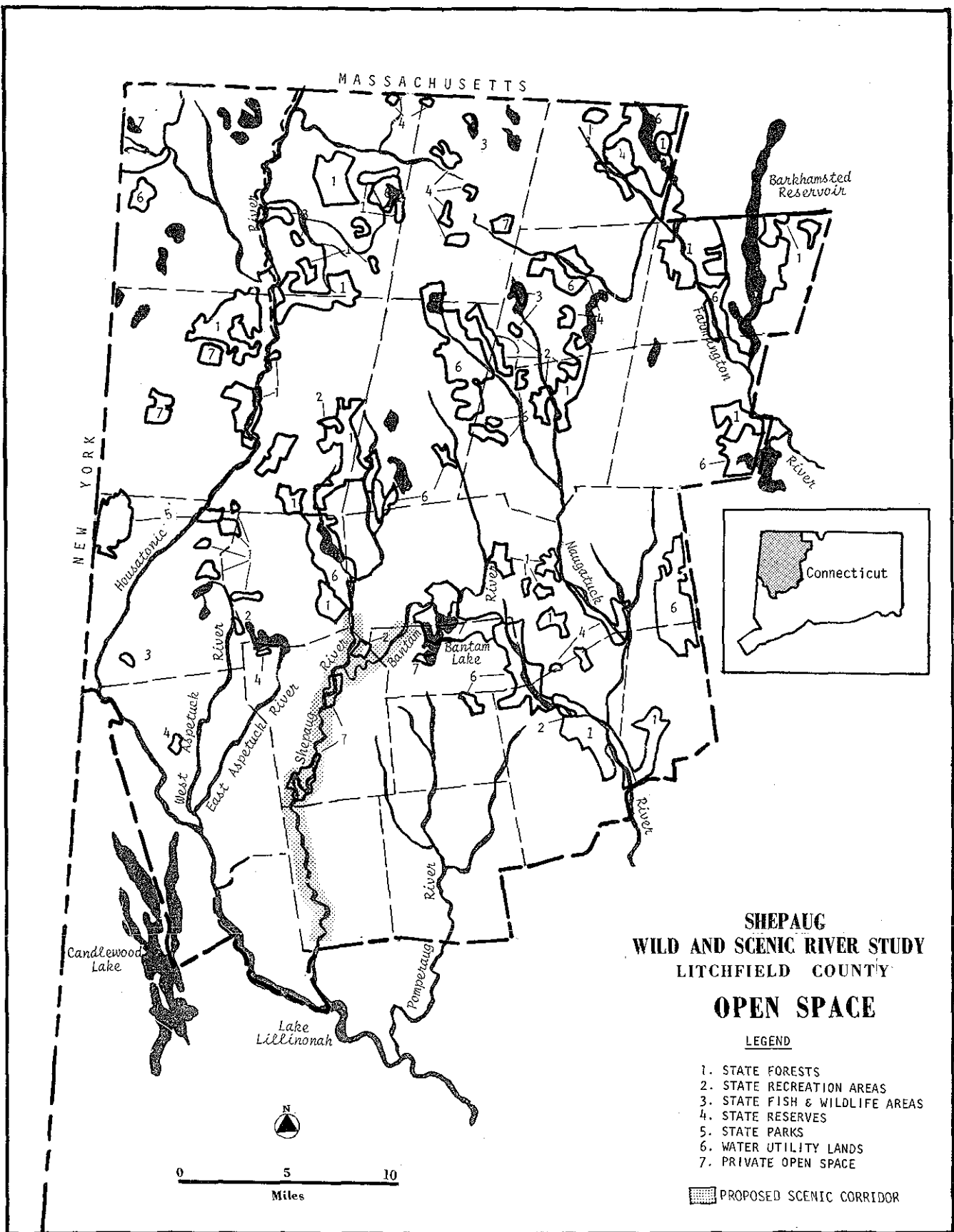
The single most important use of the region's water resources is for domestic water supply. The region has clean upland reservoirs supplying water both within and outside the area. Water provided by natural rainfall and the rivers and streams is considered more than sufficient to meet the needs of the regional population growth in the foreseeable future. There is continued interest however, in exporting water to other regions. The Shepaug has special appeal for this purpose.⁴

Although Litchfield County's forest resources have been heavily utilized in the past, there are today approximately 400,000 acres of forestland in the county. This represents about 2/3 of the county's area. Most of the forestland is owned by thousands of individual private landowners.

The forest types in the region, listed as they occur from north to south, include northern hardwoods with hemlock and white pine; transition hardwoods with hemlock and white pine; central hardwoods with hemlock and white pine; and central hardwoods with hemlock. The predominant tree species is northern red oak.

Litchfield County's pleasant landscape, interesting topography, and varied seasonal climate lend themselves to a broad array of recreational pursuits. On a regional basis these pursuits are accommodated by both the public and private sectors.

State facilities represent the largest block of open space and recreation areas, with a total of 40,000 acres. These areas are identified in the table on page 15.



On a countywide basis, more than 35,000 acres are protected watershed lands. These lands contribute much to the scenic quality and wildlife habitat of the region, but are virtually off-limits to the general public. There is a statewide controversy over the need for water companies to retain watershed holdings. Some utilities are seeking to dispose of these buffer zones as unnecessary to protect water quality. Regulatory agencies have generally taken issue with this.

Private organizations play a significant role in the preservation of open space in Litchfield County. There are 12 private trusts and Audubon Society chapters holding an estimated total of 13,500 acres. The more significant holdings are indicated on the map on page 14.

The Connecticut Light and Power Company also owns a substantial acreage in the region, primarily around the several hydroelectric power reservoirs. Much of this land is available to the public for compatible recreation pursuits.

Table 2

STATE OPEN SPACE LANDS

Litchfield County

<u>State Reserves</u>	<u>Acres</u>	<u>State Forests</u>	<u>Acres</u>
Above All	31	Housatonic	9,375
Mad River	430	Algonquin	3,822
Humaston Brook	215	Mohawk	3,035
Haystack Mountain	224	Wyantinock	3,228
Mount Bushnell	114	Mattatuck	5,503
Mount Riga	276	Paug Nut	3,794
Platt Hill	81	Peoples	2,954
Campbell Falls	102	American Legion	860
Dennis Hill	240		32,571
	1,713		

State Recreation Areas

State Parks

Mount Tom	223	Housatonic Meadows	451
Lake Waramaug	174	Macedonia Brook	2,300
John A. Minetto	678	Kent Falls	293
Sunny Brook	444	Mohawk Mountain	260
Burr Pond	346		3,304
Mattatuck	439		
Matheis	25		

2,329

TOTAL 39,917 Acres

RIVER CORRIDOR TOWNS

This report places much emphasis on the five river corridor towns of Roxbury, Washington, Morris, Litchfield and Warren. This is because the notable free flowing segments of the Shepaug and Bantam occur in these towns, and because the town is the principal unit of rural government in Connecticut. Although the county provides us with a convenient data base for a regional overview, the county in Connecticut is devoid of governmental functions. The towns are quasi-corporations, deriving their powers from general laws, rather than charters. Town governmental functions are overseen by a board of selectmen.

In some ways the five towns are probably representative of the region in general. They are old rural New England towns which trace their roots back to the Puritan settlements of the late 17th century. The rugged topography placed great demands on those who aspired to settle these towns, as attested to by the aging stone walls which lace the hillsides.

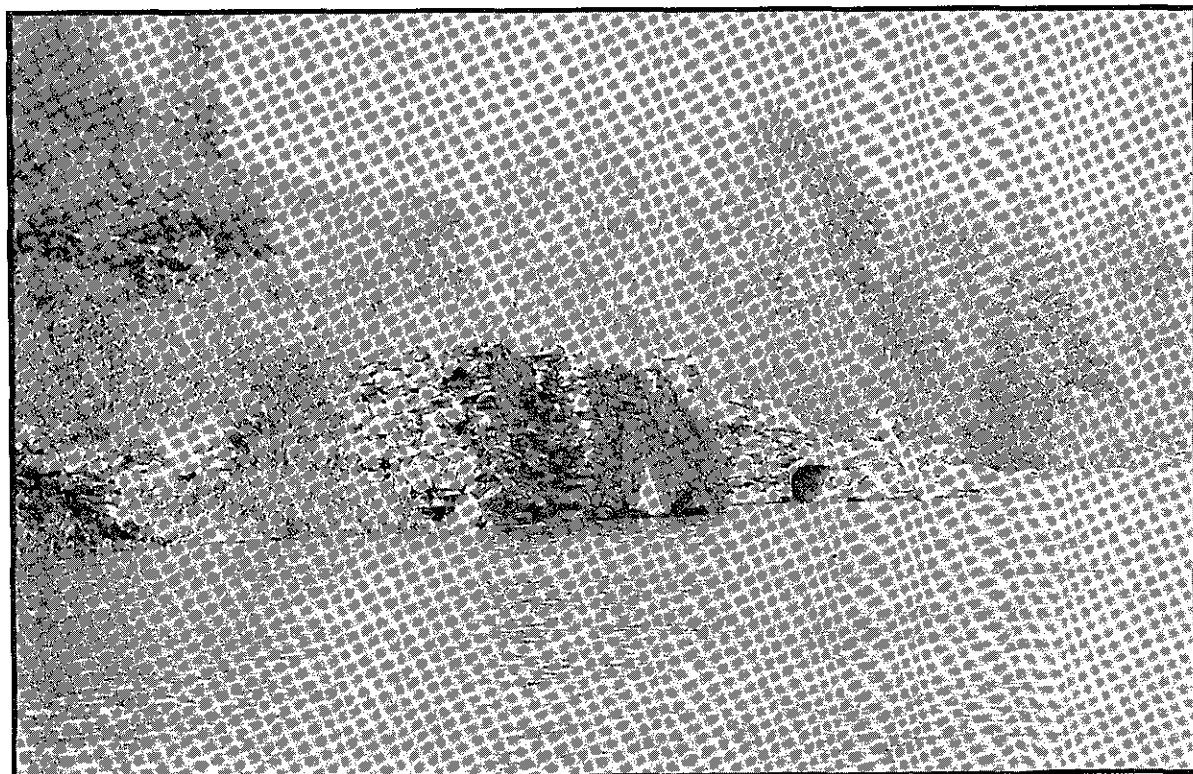


*...dairy farms
are typical of
the Shepaug
Valley.*

Through a willingness to work hard, combined with industrial know-how, the Shepaug Valley developed prosperous industries. The abundance of potential water power sites was taken advantage of, and grist mills, fulling mills and sawmills sprang up on the Shepaug and the Bantam, and on their smaller tributaries. Complementary industries were pursued back from the rivers. The availability of iron ore and hardwood forests for charcoal also played a key role in the valley's development as it did in the region as a whole.

Prosperity continued well into the 19th century. In 1872, the Shepaug Valley Railroad Company opened a rail line running a tortuous route along the Shepaug and Bantam Rivers, confident of the industrial future of the valley. But by then a reverse trend had already begun in the region.⁵

The 18th and 19th century industrial and agricultural development of the Shepaug Valley in its day had, of course, a negative impact on most of the kind of values emphasized in a wild and scenic river evaluation. Great demands were placed on the forested flood plains and hillsides for farming sites, home sites, and wood for construction and charcoal. The swift rush and rapid fall of the rivers and streams were valued more for their ability to turn waterwheels than for their aesthetic and biological values. But time and occasional floods have done much to restore the river valley to a natural setting. The hillsides are again forested; the pasture has become less common; and the ponds which smoothed the river's surface have been undammed and replaced by miles of pools and riffles. The most enduring impact of the Shepaug's development era is no more than a cultural and historic footnote brought to one's attention by the scattered ruins of old mill sites.



...scattered ruins are all that remain of old mill sites.

Although the five towns remain rural, they have experienced steady and significant population increases over the past several decades. This trend is expected to continue, as indicated in Table 3. The implications of this growth are that the special values of the Shepaug and Bantam River Valleys will gradually diminish without a plan for their preservation.

Table 3
TOWN DATA

	Area (Sq. Miles)	Density * (1974)	Population Trends					Median Family Income (1969)
			1960	1970	1980	1990	2000	
Roxbury	26.4	49	912	1,238	1,500	1,750	2,000	\$12,900
Washington	38.1	87	2,603	3,121	3,500	3,900	4,500	\$11,563
Morris	17.2	105	1,190	1,609	2,000	2,300	2,500	\$10,789
Litchfield	56.7	136	6,264	7,399	8,500	9,300	10,000	\$11,857
Warren	27.4	35	600	827	1,050	1,200	1,400	\$14,273

*per square mile

All five towns have the authority to take individual actions and initiatives to preserve the river corridor. Each town has appointed officers for planning and zoning, conservation and inland wetlands matters. All of the towns now have zoning ordinances which, with modification, could serve as a basis for a river conservation plan. Each town also has representation in a Regional Planning Agency and Soil Conservation District which could provide the necessary technical assistance and coordination.

RIVERSCAPE

The headwaters of the East and West Branches of the Shepaug (see map, page 28) rise in the town of Cornwall at an elevation of more than 1,300 feet above sea level. Both branches flow generally southward before joining to form the border between Warren and Litchfield.

The East Branch can best be characterized as a small stream with many swampy areas along its course. Its watershed is heavily forested. An important tributary to the East Branch is the Marshepaug River, which rises in Goshen. The Woodridge Lake shoreline is heavily developed with homesites. Where the stream course remains, it has little water flow and is swampy in places.

Almost half the length of the Shepaug's West Branch is dominated by the 337 acre Cairns Reservoir, which augments the Shepaug Reservoir's storage immediately downstream. The West Branch watershed is free from development and almost totally forested.

As the East and West Branches join to form the 96 acre Shepaug Reservoir at elevation 820', the setting is one of tranquil beauty. This is due to the densely forested surroundings. The Cairns and Shepaug reservoirs are managed strictly for municipal water supply purposes, and public trespass is prohibited.

Below the 50 foot high dam which creates the Shepaug Reservoir is a 1/4 mile long pond. It is not until the Shepaug's waters pass this point that they flow in a manner that meets the free-flowing criterion of the Wild and Scenic Rivers Act. This point is at river mile 24.6 and is marked by a service road bridge.

From the service road bridge to the Route 202 bridge one mile downstream the river ranges in width from 10 to 25 feet, is boulder-strewn and bordered by dense brush and mixed hemlock-hardwood forest. It is apparent here why the Indians applied the word "Shepaug", which means rocky waters, to the river. A light duty paved road parallels the river on its west bank, along which a few homes are located. Flow in this section is very slight during most of the year, due in part to low volume runoff upstream, and to the regulating influence of the reservoirs. Only during periods of unusually high runoff is this river segment navigable by canoe or kayak. The river valley in this one mile reach is very narrow with little flood plain area.

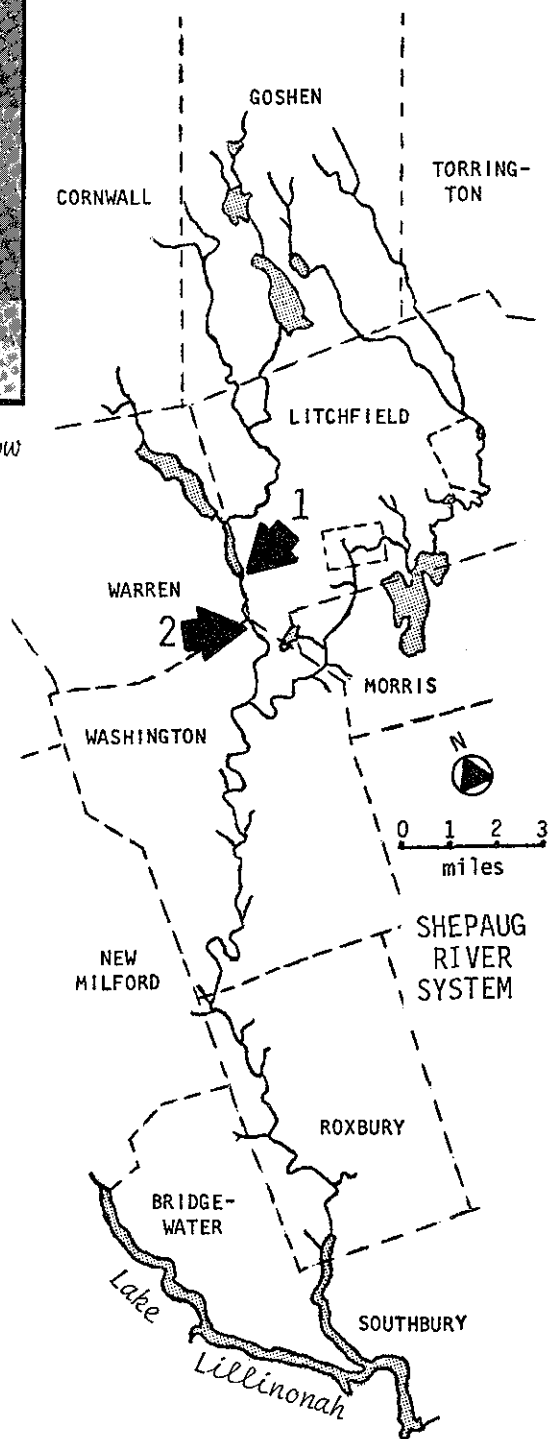
The river continues southward from Route 202 through the narrow, incised valley, and reaches its confluence with the Bantam River. This 2.2 mile stretch is heavily wooded and undeveloped, although the river is paralleled by an unimproved town road.



▲
1 ...eligible section begins at pond below Shepaug Reservoir dam.



▲
2 ...Shepaug River upstream from Route 202 bridge.



The Bantam River is the Shepaug's main tributary. To trace it to their confluence one must begin at the headwaters of the Bantam's East and West Branches at an elevation of 1,300' in Goshen. The East and West Branches are low volume streams which flow southward through stretches of swampland and rugged terrain. There is a pond and two small reservoirs in their headwaters. The Connecticut Chapter of the Nature Conservancy has preserved much of the stream corridor here and immediately downstream in cooperation with private landowners.

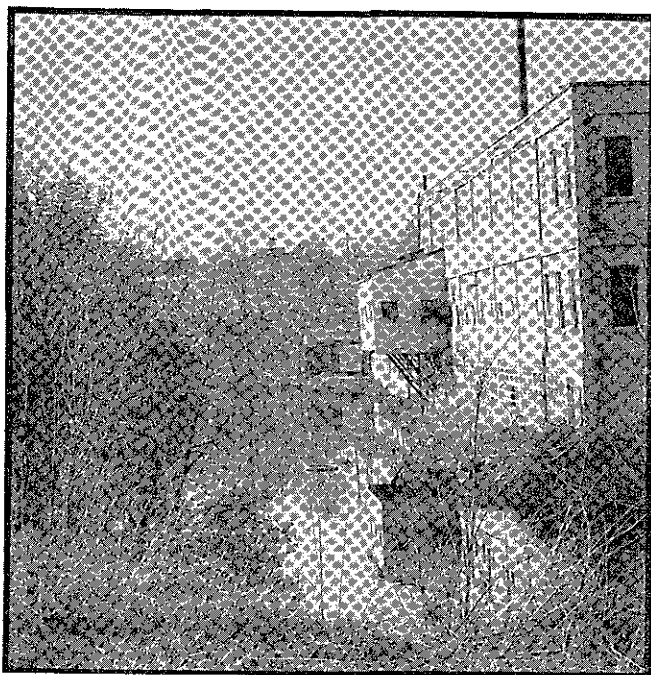
The two branches join in Litchfield at an elevation of 950', and the Bantam continues south from there forming the eastern boundary of the Borough of Litchfield, and descending 50' in the next five miles. At this point, as the river enters the 4,000 acres protected for conservation purposes by the White Memorial Foundation, the river's gradient is almost imperceptible as it meanders for three miles through undisturbed wetlands and into Bantam Lake. Bantam Lake is a shallow eutrophic lake which has been plagued by nuisance algae blooms and extensive growths of rooted aquatic plants. Much local and state effort has been directed at determining the cause of these problems and seeking their resolution.

As the Bantam River leaves the lake it flows through the Borough of Bantam. There are two dams affecting the river at this point. One is a low dam of little consequence; the other a dam built for generating electricity, but which has been out of operation since 1974. The hydro-electric dam was constructed in a deep gorge which closely parallels the main highway through Bantam for approximately 1/2 mile. Commercial and residential buildings also disrupt the river setting through Bantam.

On exiting Bantam, the river receives effluent from the Litchfield Sewage Treatment Plant. The plant is a modern facility with secondary treatment, built in 1971. Its 1990 design capacity is 800,000 gallons per day.

It is the opinion of the study task force that the Bantam River, from the sewage treatment plant north, does not meet the eligibility criteria for the National Wild and Scenic Rivers System. While commendable efforts have been made through private effort to preserve several miles of the Bantam's headwaters and the wetlands in the White Memorial property, low stream flow volume, developments in Bantam, and dams on the river in Bantam render those upstream segments unsuitable for the National System.

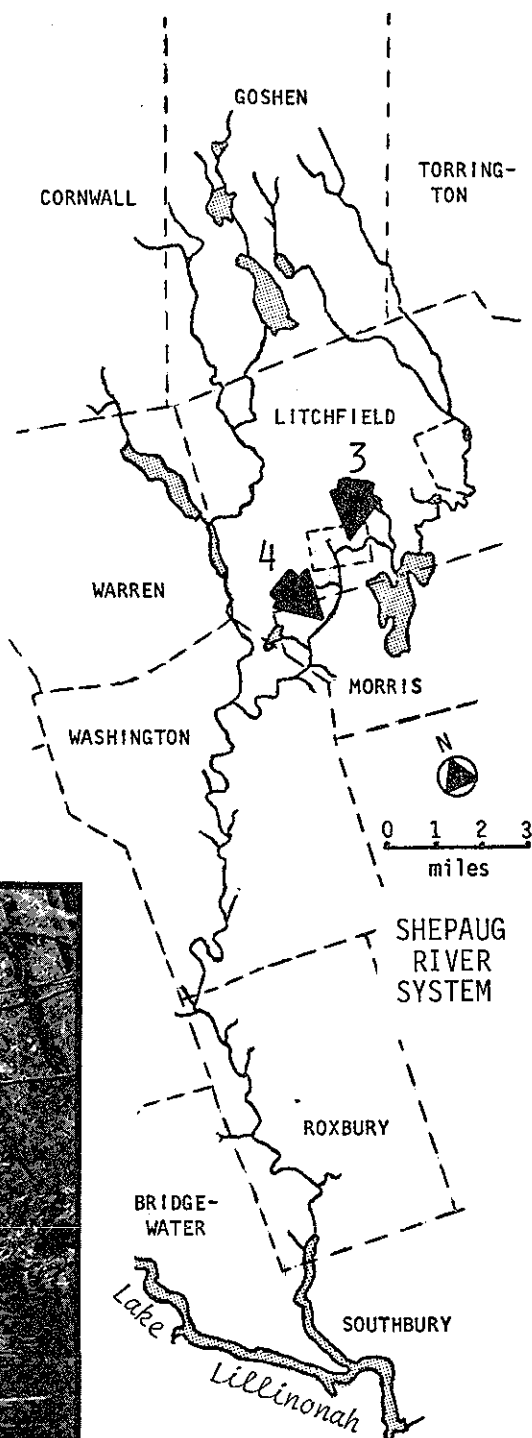
A short distance downstream from the sewage treatment plant, Stoddard Road bridges the Bantam and is a reasonable upstream starting point for that segment of the Bantam recommended for inclusion in the National System.



▲ 3 ...factory on the river in Bantam.



▲ 4 ...secluded section of the Bantam River.



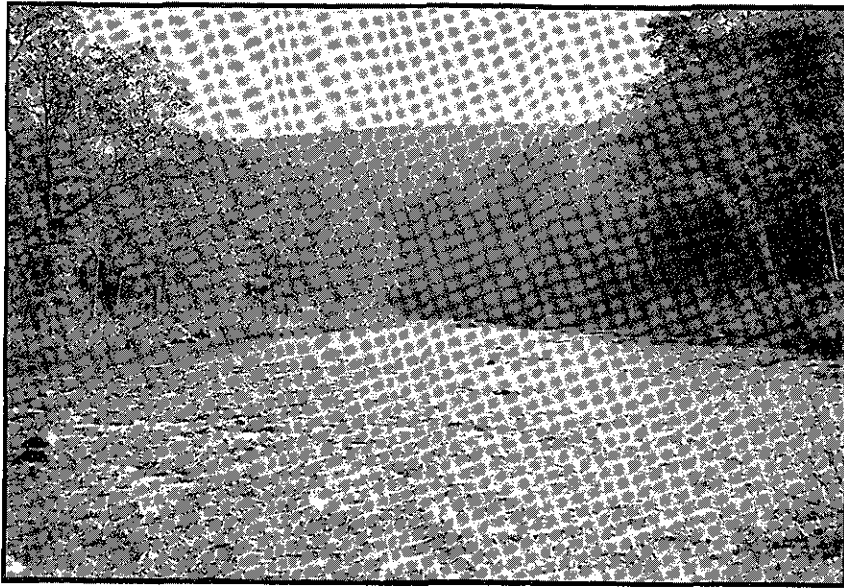
Downstream from the bridge, the river flows in a southwesterly direction through hardwood forests, although in a few places there is only a narrow buffer between the river and old fields reverting to forest. The buffer is especially critical near the next road crossing where gravel is being mined close to the river and there is danger of adverse effects on the river. It is important that the operation be screened by an adequate plant buffer zone, and that runoff not cause siltation of the river. Continuing, the Bantam offers a more secluded atmosphere until emerging near the West Morris Road bridge, which is an unimproved town road and which crosses the Bantam again 1/2 mile downstream. In this 1/2 mile, several residences and outbuildings can be seen near the river. The water power potential in this segment of the Bantam was recognized two hundred years ago when dams were constructed for various mill operations. Their ruins are all that remain today.

For the next two miles the river flows again through a secluded valley, with densely forested hillsides, hemlock stands and rock outcroppings. Mount Tom State Park borders the river for a short distance. Farm buildings and the Rumsey Hall School downstream mark the approaching confluence with the Shepaug.

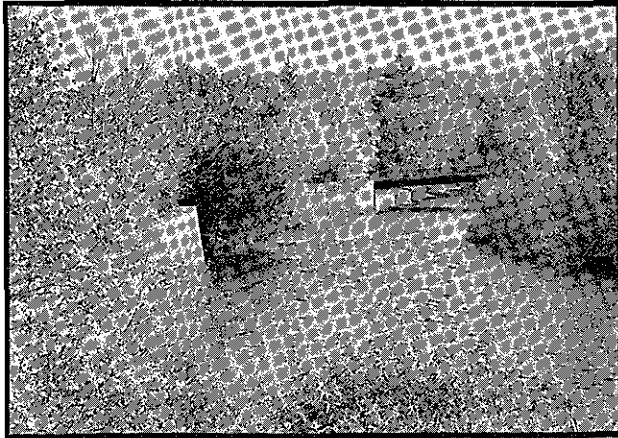
Joined now by the Bantam, the Shepaug's main stem continues southward through a narrow, well-defined valley. Gravel and boulders, worn smooth over time, continue to typify the river bed, although there are occasional rock ledges. In places, the hillsides climb steeply to a ridgeline 500 feet above the valley floor. For three miles, these hillsides are blanketed with hemlocks and hardwoods, and nearly half of this is preserved as part of the Steep Rock Association's "Hidden Valley." The river's gradient is less severe from this point south, averaging a drop of 20 feet per mile.

The next sign of civilization occurs at the Route 47 crossing, and continues for two miles as Route 47 parallels and again crosses the river and passes through the hamlet of Washington Depot. For most of those two miles, there is a buffer strip between the highway and the river, and development is not readily discernable from the river. The streambank is retained in places by a concrete wall, built after severe floods of 1955.

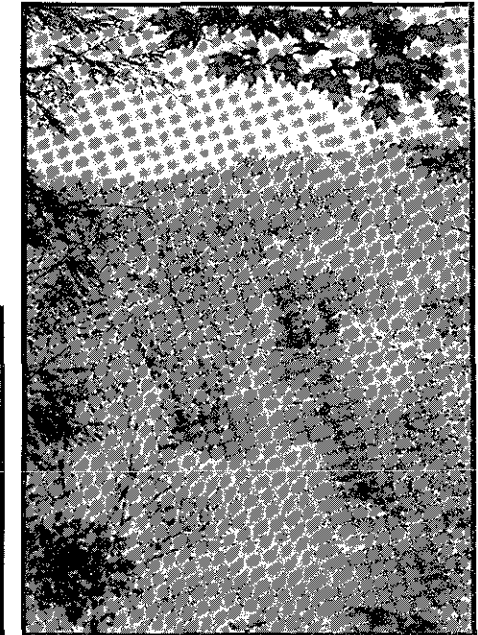
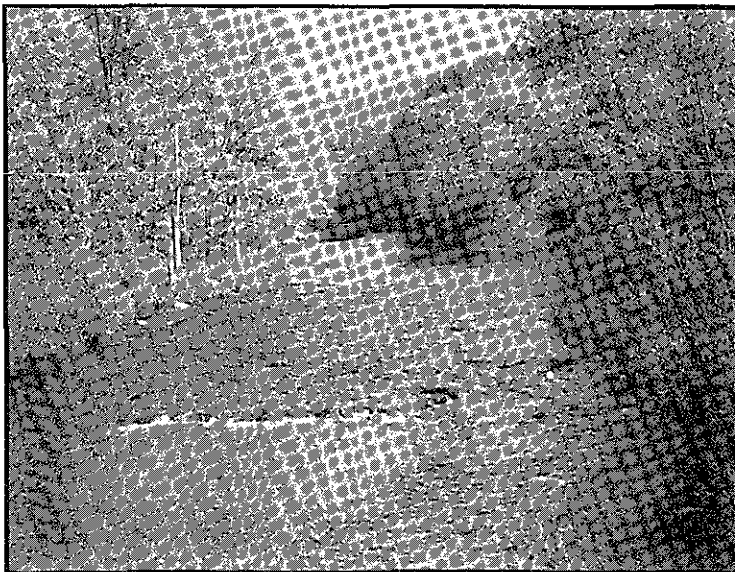
A short distance downstream from Washington Depot, the river again assumes a natural character. From here to the Roxbury town line, a distance of four miles, more of the shoreline and hillsides are held in the public trust by the Steep Rock Association. Some parts of the tract are used for hiking and horseback riding. An unimproved town road provides access to the river.



◀ 5...looking upstream
into Hidden Valley.

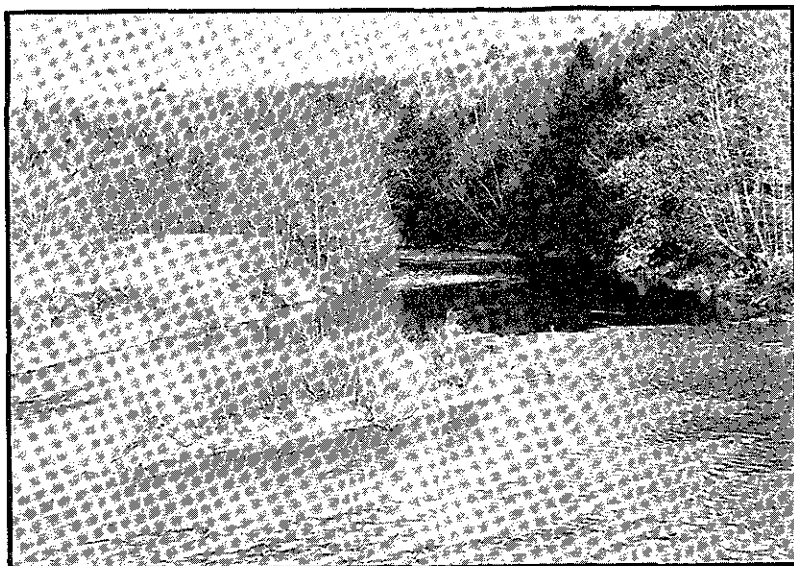
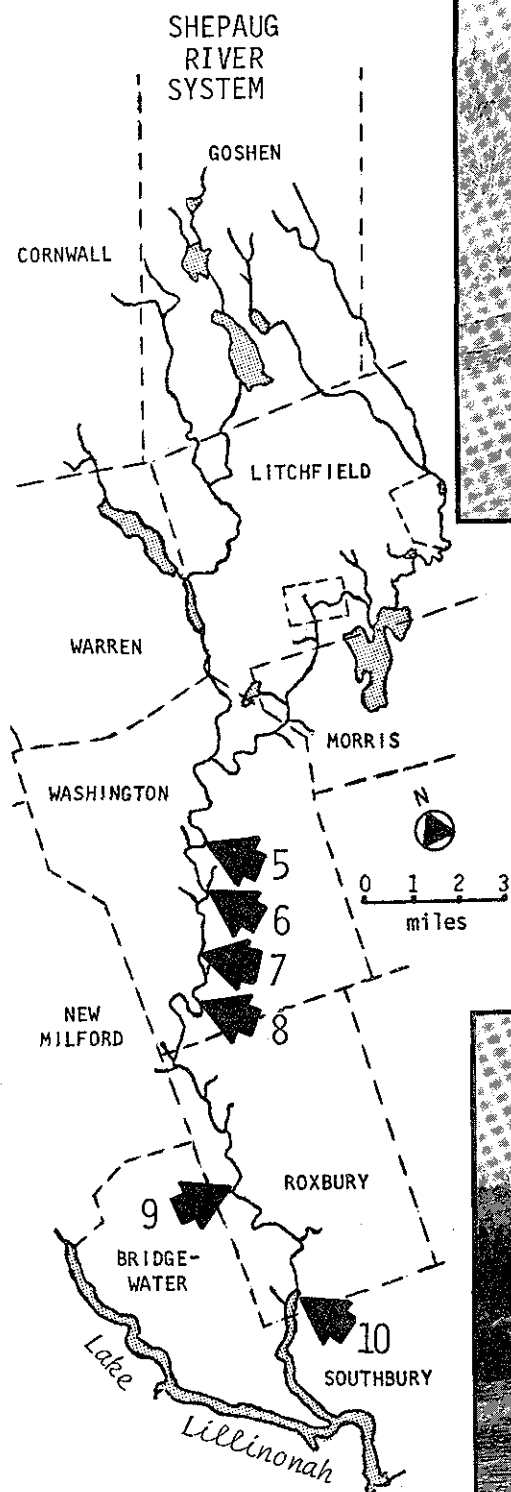


◀ 6...retaining wall along river
in Washington Depot.



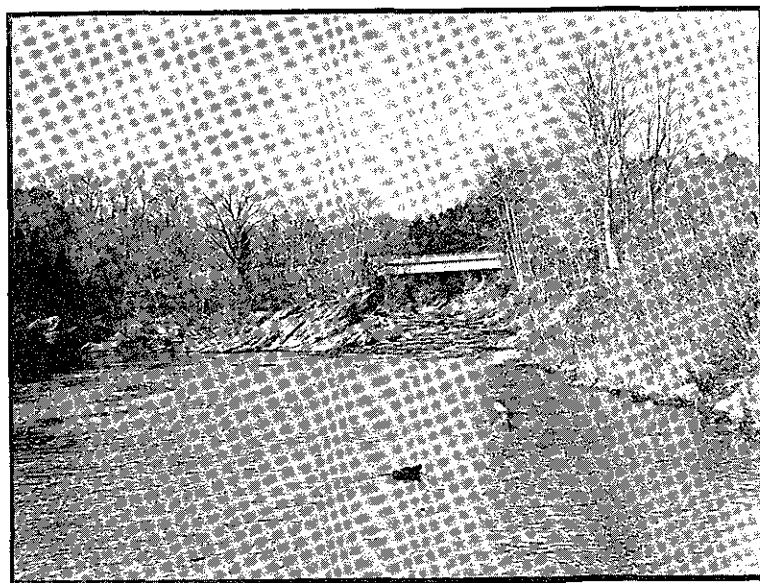
▲ 8...Steep Rock area.

◀ 7...facing upstream, one
mile below Washington Depot.



▲ 9 ...Wellers Bridge area in Roxbury.

▼ 10 ...lower end of Roxbury Falls as seen from Lake Lillinonah.



It is in this reach that a rather spectacular geologic feature is found. The river makes two 180° changes in direction as it carves a tight "S" turn into the hills. The Steep Rock precipice here towers 400 feet above the river, lying opposite a curve known as "The Clam Shell." Another significant feature opposite the Clam Shell is a ten acre stand of what is purported to be virgin hemlock.

Just north of the Roxbury town line, a 115 k.v. transmission line spans the river. However, the depth of the valley limits the perspective from which the line can be seen. Along the westerly edge of Roxbury, the flood plain is broader, and pastures and corn fields are common sights along the river. Where farming has been discontinued, fields are in early stages of succession. The steeper hillsides are forested, and fewer than a dozen dwellings and out-buildings are noticeable from the river. The river is paralleled in places by a two lane improved road which offers scenic views for motorists.

Three miles south of the Roxbury-Washington border, the Connecticut Department of Transportation maintains Hodge Park on Route 67, which is a medium duty two lane highway designed for local traffic. The park is used for picnicking, fishing and as a canoe take-out point. The historic Mine Hill property on the opposite side of the river can be seen from the park.

A short distance downstream the river is ponded behind a low dam of granite block construction, which was built in 1896 to replace a wooden mill dam. Although other low dams on the Shepaug have been destroyed over the decades to alleviate problems caused by ice blockage and flooding, this dam has been retained as a remnant of the past, and provides a refuge for aquatic life during periods of low streamflow.

For the next four miles farmland and woodland alternate along the river, which continues to descend about twenty feet per mile as it approaches Lake Lillinonah. The final 1/4 mile is most distinctive, however, as the river enters a chasm and gains momentum, cascading over rocks and ledges and ending in the backwaters of Lake Lillinonah. The town of Roxbury owns parkland along this reach, known as Roxbury Falls.

The final 3.8 miles of the Shepaug River are waters impounded by the Shepaug Dam on the Housatonic River. Although these waters and surrounding forested hillsides are generally attractive and hold excellent recreation potential, they do not meet the criteria for the Wild and Scenic Rivers System.

HISTORIC & ARCHAEOLOGICAL RESOURCES

The early settlers in the Shepaug and Bantam River areas were clever and industrious people who took advantage of the region's natural resources.

Sawmills, grist mills, fulling mills and iron forges, with their water wheels, dams and complementary industries, were well developed during the 18th century. Continued industrial prosperity was anticipated as construction began in 1870 on the Shepaug Valley Railroad. But floods and a changing economy have resulted in the river valley reverting to a primitive and pastoral character.

The map on the next page shows a selected sampling of sites with historical interest within the river corridor. Local historic districts have been created outside the river corridor in both Washington and Roxbury. These are not included in the National Register of Historic Places, however.

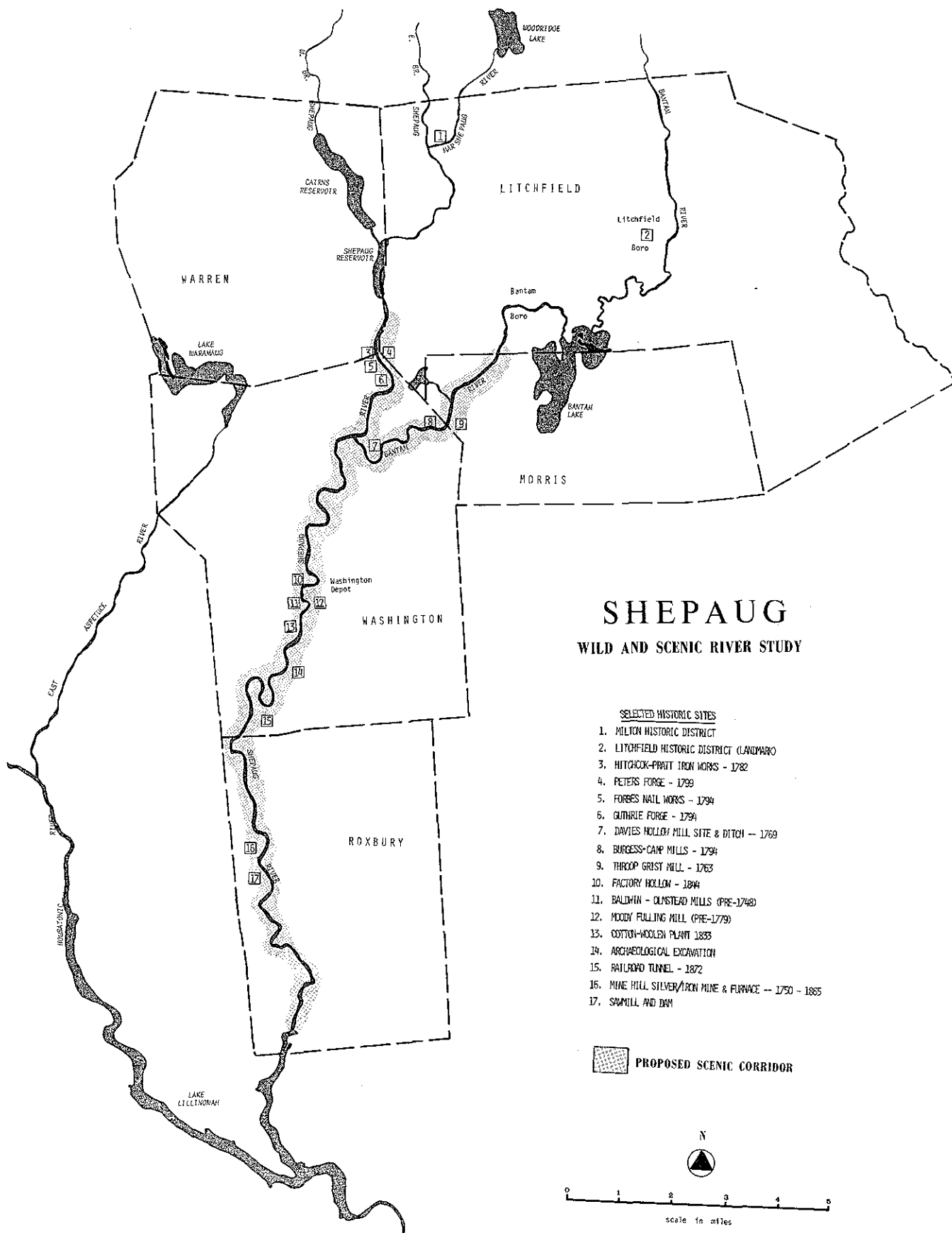
The Village of Milton, in Litchfield, is also a historic district, and is located on the upper reaches of the Shepaug River. Litchfield's town center borders on the upper reaches of the Bantam River, and is a registered National Historic Landmark.

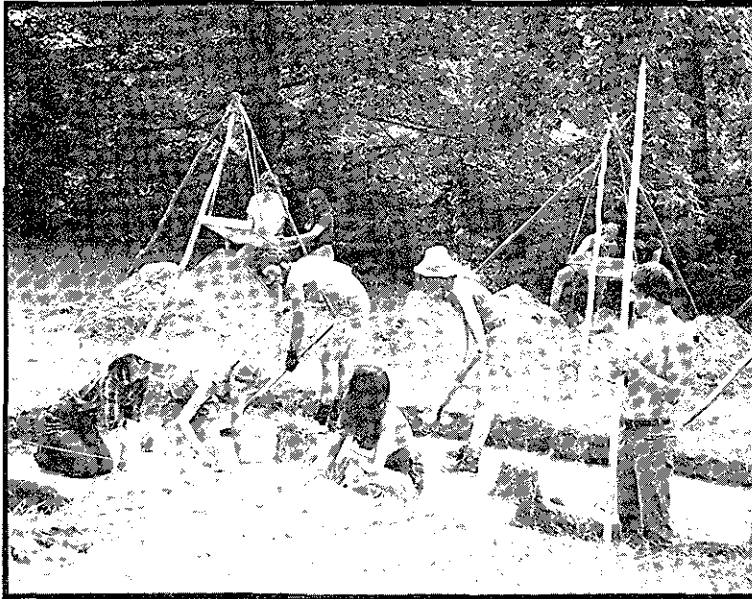
Another prominent historic feature is Mine Hill, in Roxbury. The Mine Hill property is a ridge of granite gneiss upon which much effort has been exerted over the last two centuries to extract ore -- principally silver and, later, spathic iron ore -- and to quarry granite. The blast furnace and roasting furnaces from the iron mining days can still be seen, as can the old railway bed which climbs the hill.⁶

While there has been moderate recognition given the historic resources of the Shepaug and Bantam River Valleys, the prehistoric resources have generated a great deal of attention. Very little is known of the life and culture of the early Indians living in western Connecticut. Natural destructive processes and changing land uses have steadily destroyed the artifacts left by them. It is for this reason that the preservation of the river corridor is especially important.

In the Shepaug and Bantam corridor, geologic and hydrologic conditions have produced the best possible circumstances for preserving evidence of early habitation. Periodic floods deposited sediments which are believed to have covered and preserved the former campsites and activity areas of the early Indian occupants. As the flooding and habitation occurred in sequence, it is believed that deeply stratified layers of soil have isolated evidence of the various cultures which progressively occupied the valley since the retreat of the glaciers. This phenomenon has taken place in few other river valleys in Connecticut.

The potential for the Shepaug Valley to yield significant archaeological data is, of course, enhanced by the fact that little development has occurred which might have had a destructive effect on these prehistoric sites. While large scale excavations under ideal conditions and with scientific controls have not been conducted in the Shepaug Valley, data have been obtained for small scale excavations, controlled surface collections, and uncontrolled collections by individuals with varying degrees of expertise. These data reveal that the valley has been occupied by man for 10,000 years.





...archaeological excavation in Shepaug floodplain.

(photo by R. Moeller)

In recognition of the outstanding potential for archaeological discovery in the valley, the American Indian Archaeological Institute is headquartered there. The institute conducts research and educational programs directed at early Indian history and culture. During its first year of operation, the institute had more than 6,000 visitors.

GEOLOGY & MINERALS

The bedrock of the river corridor consists of metamorphic and igneous rocks, mostly gneisses, schists, and granite-like gneisses that were folded and deformed several hundred million years ago, during the building of the Appalachian Mountains.

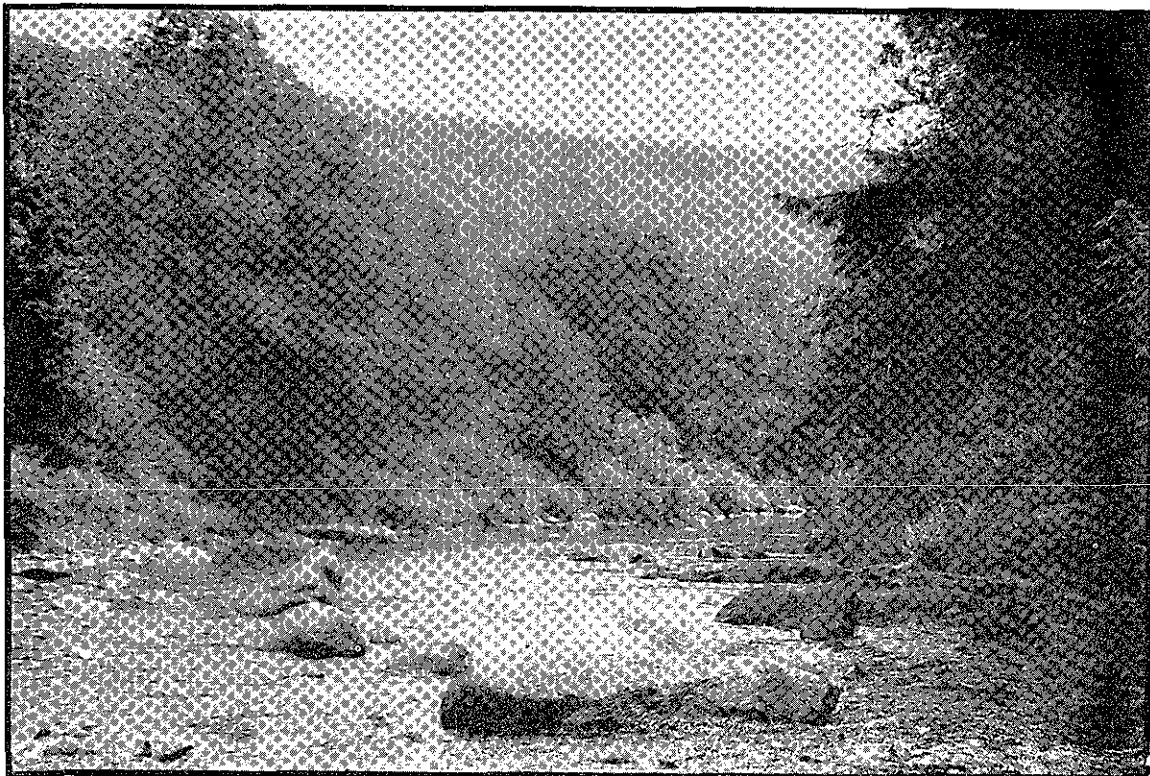
The rocks at the surface today are the deeply eroded roots of the once lofty mountain range. The steep valley walls expose large areas of bedrock where a variety of rock types and rock features are visible. Of particular interest are the large crystals of garnet, staurolite, and kyanite that stud the finer grained mica schists. Garnets are semi-precious gem stones and the deposits may have economic value. The large exposures of bedrock contribute to both the scenic character of the valley and to the interest of amateur and professional geologists and mineralogists.

The entire area was subjected to glacial action, and the surficial geology is evidenced by the plucked, smoothed, and striated ridgetops and by the terraces of stratified sand and gravel that line the valley floor. Many of these features are particularly apparent because of the lack of significant human modification. Although none of the glacial features are singular or unique, the rugged and diverse physiography has concentrated a variety of glacial features on both the ridges and in the valley.

The geologic features and the geologic history relate to the present physiography of the river corridor. Even the untrained eye begins to appreciate the relationship between landform and geologic process in the Shepaug valley.

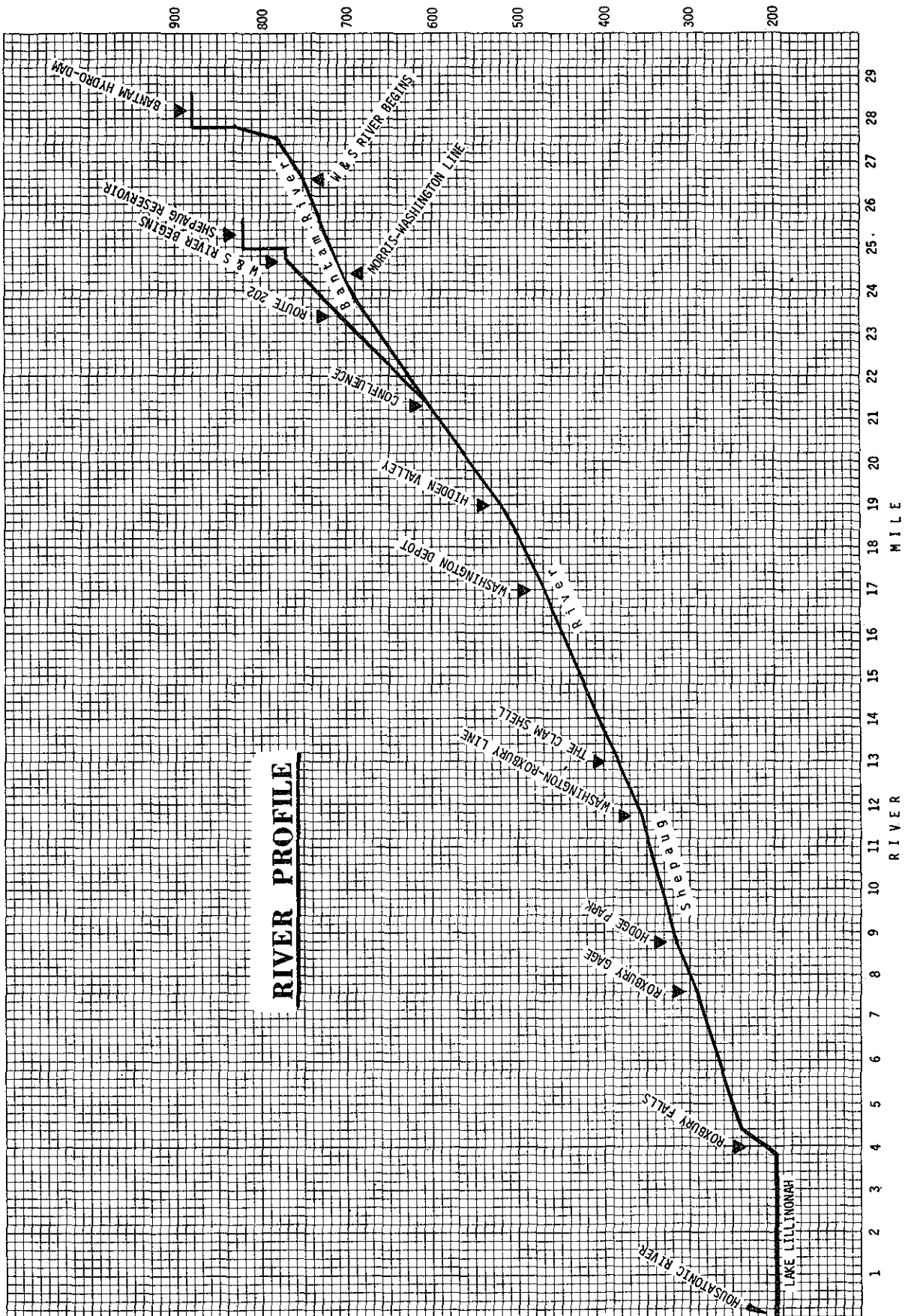
The river's length from the Shepaug Reservoir to Lake Lillinonah is about 14 miles as the crow flies; but along the course of the river it is just over 20 miles. The extra length is the result of a large number of deeply incised meanders. The spectacular "S" turn in the Town of Washington mentioned earlier is the prime example. The relatively steep descent in this 20 mile reach is 560 feet.

In general, the valley floor lies about 500 feet below the elevation of the surrounding hilltops. The valley walls drop abruptly down to the river, often with almost sheer faces of 300 to 400 feet. The upper part of the river has a very narrow valley, with the floor only a few hundred feet wide. Areas of broader and better defined flood plain generally begin to appear below Washington Depot, where the valley floor ranges closer to one-half mile in width. The river has cut this relatively narrow and steep valley into the surrounding uplands, which have hill top elevations of 800 to 1200 feet above mean sea level.



...steep gradient, landform variety, and remoteness make the river valley one of the most significant natural features in Connecticut.

ELEVATION IN FEET ABOVE MEAN SEA LEVEL



RIVER PROFILE

According to the Connecticut Natural Resources Center, the river's relatively steep gradient, rugged and narrow valley, and the variety of interesting and scenic landforms within the valley combine to make this river corridor one of the most significant natural features of its type in the state.

There has been modest exploitation of the mineral resources of the valley. The search for silver and iron ore in the Mine Hill area of Roxbury has been noted in the HISTORY & ARCHAEOLOGY section of this report. Mine Hill was also the site of a granite quarry at one time. No other activities of this type have been pursued in recent years.

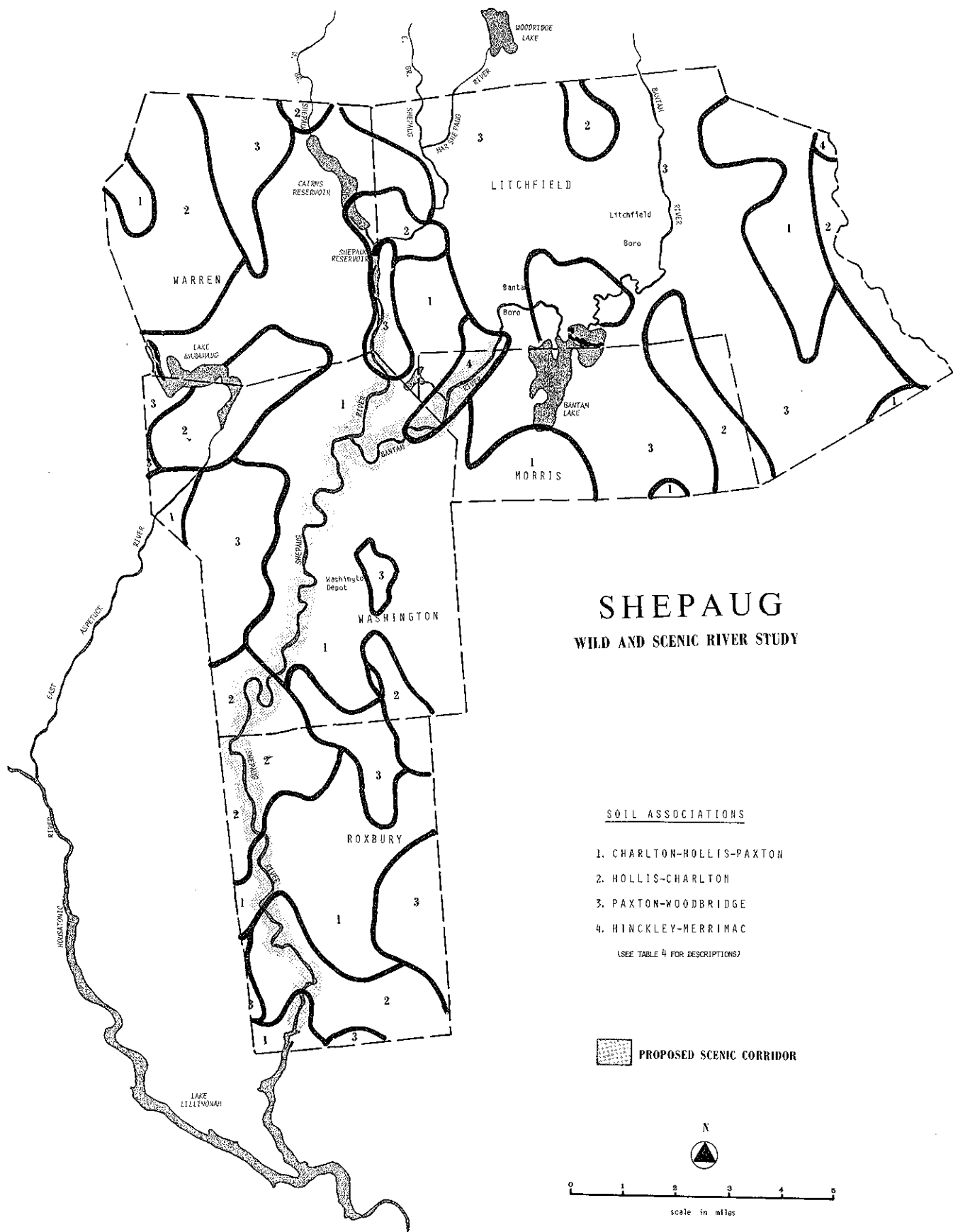
Approximately fifteen acres of sand and gravel deposits are being mined in Roxbury, Washington and Morris, and other deposits are numerous in the corridor and in the region in general. Figures are not available for the quantity of material being mined. While these activities are important to the local or regional economy, it is important that they take place in a manner that will not result in significant erosion or stream siltation. Efforts should also be made to screen such activities from the view of the general public, and to restore mined areas to an esthetically pleasing setting.

SOILS

The soils in the river corridor are largely glacial till and outwash. The till is a mixture of stones, sand, silt and some clay. Till covers the sides and crests of the hills in the corridor except on very steep slopes or along very narrow ridges. Glacial till also fills the valley floor over which outwash of sand, gravel, silt and some clay are stratified.

A detailed Soil Survey has recently been completed for the river towns, prepared cooperatively by the Soil Conservation Service, Connecticut Agricultural Experiment Station, and the Storrs Agricultural Experiment Station. The soils have been classified in the survey, and their limitations and potentials for specific uses have been identified. This type of information is very useful as a tool in making land use decisions, since it helps to identify areas where costly engineering problems will be encountered, and where development might cause environmental damage. As can be seen in the map on the next page and the table which follows it, the soils commonly found in the area place serious constraints on typical development features. It is also important to note that most of the farming activity in the river corridor takes place on soils categorized by the U.S. Department of Agriculture as prime farmland.

A complete inventory of soils within the river corridor is beyond the scope of this report. However, more detailed planning which may grow out of this report should defer to the Soil Survey of Litchfield County as decisions may be necessary for siting of facilities and regulating development. Final decisions on these matters will require on-site evaluation of soils suitability.



DESCRIPTION OF SOILS (1)

Charlton - deep, well-drained, nearly level or undulating to hilly soils that developed in friable to firm glacial till. The till was derived mainly from schistose rocks, but, to some extent, from granite and gneiss.

Hollis - well-drained or somewhat excessively drained, gently sloping to steep soils that are very shallow or shallow over crystalline bedrock, including schist and gneiss. These soils developed in a thin mantle of glacial till and the underlying residuum derived from bedrock.

Paxton - well-drained soils that developed in glacial till derived principally from schistose rocks mixed with gneiss and granite. These soils have a compact layer, or fragipan, at a depth of about two feet. They commonly occupy drumlins or drumlinal hills.

Hinckley - Nearly level to undulating and rolling, excessively drained, and droughty. They developed in deep deposits of stratified sand and gravel that were derived mainly from granite, gneiss and schist.

Merrimac - Nearly level to sloping, and somewhat excessively drained. At a depth of about two feet they are underlain by stratified sand and gravel that were derived mainly from granite, gneiss, schist, and quartzite. These soils are scattered on valley terraces.

Woodbridge - moderately well-drained, nearly level to sloping soils that developed in compact glacial till. The till was derived mainly from grey mica schist but included varying amounts of granite and gneiss. These soils are underlain by a compact layer at a depth of about two feet.

(1) from Soil Survey of Litchfield County, 1970.

TABLE 4
INTERPRETATIONS FOR GENERAL SOIL MAP (1)

SOIL ASSOCIATION AND COMPONENT SOILS (2)	PERCENT OF ASSOCIATION (3)	SOIL LIMITATIONS FOR: (4)			SOIL POTENTIALS FOR: (5)		
		SEPTIC TANK ABSORPTION FIELDS	DWELLINGS WITH BASEMENTS	LOCAL ROADS AND STREETS	CROPLAND	WOODLAND	WOODLAND WILDLIFE HABITAT
CHARLTON-HOLLIS PAXTON							
1 Charlton	40	severe	severe	severe	poor	good	good
Hollis	20	severe: LS	severe: LS	severe: LS	poor: LS	good	good
Paxton	20	severe: DR	severe: DR	severe: DR	poor: DR	poor: DR	fair: DR
Others	20	severe: PS	slight	moderate: FA	good	good	good
HOLLIS - CHARLTON							
2 Hollis	45	severe	severe	severe	poor	poor	fair
Charlton	30	severe: DR, SL	severe: DR	severe: DR, SL	poor: DR, SL	poor: DR	fair: DR
Others	25	severe: LS	severe: LS	severe: LS	poor: LS	good	good
PAXTON-WOODBRIDGE							
3 Paxton	45	severe	slight	moderate	good	good	good
Woodbridge	30	severe: PS	slight	moderate: FA	good	good	good
Others	25	severe: PS, WT, LS	severe: WT, LS	severe: FA, LS	poor: LS	good	good
HINCKLEY-MERRIMAC							
4 Hinckley	40	moderate (7)	moderate	moderate	fair	fair	poor
Merrimac	30	moderate: SL	moderate: SL	moderate: SL	fair: SL, DY	fair: DY	poor: DY
Others	30	slight	slight	slight	good	good	good

(1) This table has been extracted from data presented in the King's Mark Resource Conservation and Development Plan.

(2) OTHERS represents minor soils in the association. No one of the individual minor soils makes up as large a percentage of the association as the named soil with the lowest percentage.

(3) The percentages are estimates and are not based on measured acreage.

(4) The overall rating for the association is based on the rating for the dominant soil or soils. If more than one soil has the same rating. SLIGHT - These soils have few limitations for the use indicated. MODERATE - These soils have one or more features that limit their use. It will be more difficult and costly to overcome the natural limitations of these soils than for those rated slight. SEVERE - These soils have one or more features that seriously limit their use. Using soils with a severe limitation will increase the probability of failure and add to development difficulty and costs.

(5) GOOD - These soils are relatively free of restrictive features and have good potential for the use specified. FAIR - These soils have one or more restrictive features and have intermediate potential for the use specified. POOR - These soils have one or more restrictive features which substantially limit their potential for the use specified.

(6) Abbreviations of restrictive soil features which determine limitation and potential ratings:

DR - Depth to Rock LS - Large stones SL - Slope
DY - Droughty PS - Percolates slowly WT - Wetness
FA - Frost action

(7) Possibility of ground water pollution

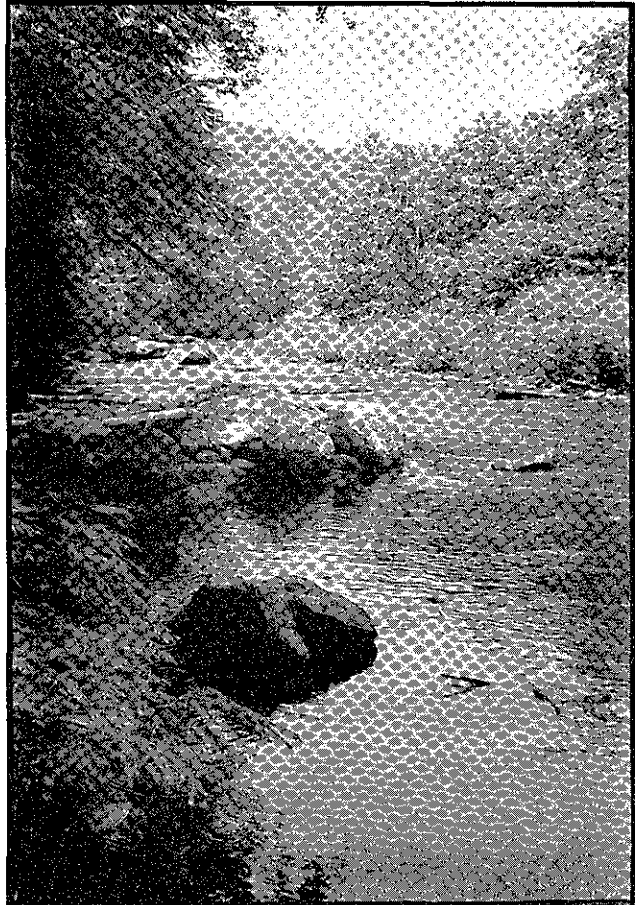
FLOW CHARACTERISTICS

The Shepaug watershed has an area of 150 square miles, and streamflow is proportionately small. A gaging station in the Town of Roxbury, four miles upstream from Lake Lillinonah, provides the most useful data on the Shepaug's flow. The mean annual discharge at this location, for the period 1930 to 1971, measured 236 cubic feet per second (c.f.s.). For comparative reference, field observation indicates that 375 c.f.s. is needed for canoeing from Litchfield to Roxbury without dragging or portage.

The gradient of both the Shepaug and the Bantam is relatively steep, with a fall ranging from 20 to 30 feet per mile. The steep gradient contributes to rapid and proportionately high percentage runoff. A profile of the river is graphically illustrated on page 31.

Although precipitation is rather evenly distributed through the year, with a yearly total averaging 43 inches, streamflow varies greatly in seasonal cycles. As shown in the table on page 40, maximum consistent streamflow occurs in the spring months. This is the period during which runoff is at its highest. Runoff diminishes during the warmer months. These cyclical trends result from a complex of factors, including increased loss of water to the atmosphere by plantlife during the growing season; ice and snow stored on the land surface during the winter and melting in March and April; and a higher water table in the spring, resulting in greater ground water discharge.

Floods may occur at anytime of the year. Spring floods are common and are sometimes accompanied by destruction from moving ice. Floods in late summer and fall are usually the result of



...streamflow is low during the warm summer months.

hurricanes or other storms. Winter floods result from occasional thaws, particularly in years of heavy snowfall. In 1955, a flood discharge of more than 50,000 c.f.s. ravaged the valley and the prospect of a recurrence does much to discourage redevelopment.

WATER QUALITY

One of the requirements which must be met for a river to be eligible for the National Wild and Scenic Rivers System is that it be of high quality water or susceptible of restoration to that condition. As discussed earlier, the East and West Branches of the Shepaug, together with the Marshepaug River, form the Shepaug's headwaters and flow into the Shepaug Reservoir. The reservoir, in turn, serves as a source of drinking water for the City of Waterbury. Standards for drinking water are very high, and streams used for this purpose are classified "AA." Swimming is not permitted in waters used for drinking supply, nor is the discharge of sewage effluent permitted.

From the Shepaug Reservoir dam downstream to the confluence with the Bantam the river is classified "A" quality. Water of this class may be suitable for drinking water supply and/or bathing, and may be subject to restrictions on the discharge of pollutants.

The uppermost reaches of the Bantam are also classified "AA," being used as drinking water supply. Downstream toward Bantam Lake, the stream receives treated effluent from one very small private plant, and the stream classification is lowered to "Bs." This small plant will be phased out in the future, and the stream will be upgraded to class "A." The "B" classification indicates suitability for bathing and other recreational purposes, agricultural uses, certain industrial processes and cooling; excellent fish and wildlife habitat; and good aesthetic values. The subscript "s" indicates suitability for cold water fisheries, including fish spawning and growth.

Bantam Lake has a eutrophication problem caused by excessive nutrient enrichment. The problem has received much attention and steps have been taken to alleviate it by relocating the Litchfield sewage treatment plant downstream from the Lake. Also, the Department of Environmental Protection has applied regulations to the lake which prohibit any additional discharge which would increase the phosphorous concentration to a value greater than .03 mg/l at low flow conditions. At the local and state levels action has also been proposed to deal with nutrient-laden sediments in the lake. Care must be taken that remedial actions do not cause problems downstream.

As the Bantam River leaves the lake it receives 120,000 gallons per day of heated effluent containing traces of metals from an industrial source. The effluent is discharged pursuant to a water quality control permit issued by the State.

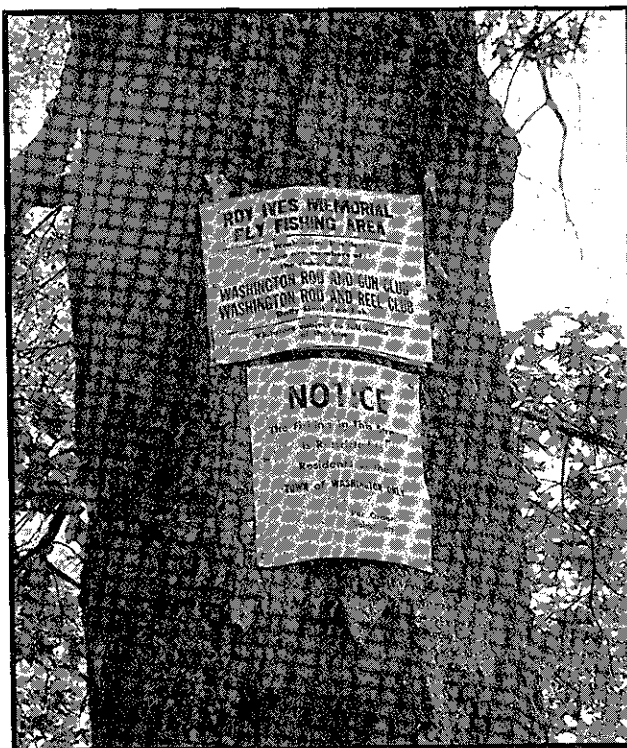
Less than a mile downstream the Bantam receives effluent from the Litchfield sewage treatment plant. The plant has a 1990 design capacity of 800,000 gallons per day, which is already being approached due to a severe infiltration inflow problem. Remedial actions are being taken to alleviate the infiltration. The plant provides for primary settling, activated sludge treatment, and chlorination. This stretch of the Bantam, from the lake outlet to its confluence with the Shepaug, is classified "Bs" and receives no other direct effluent.

From the confluence of the two rivers, downstream to Lake Lillinonah, the river is classified "Bs." In this seventeen mile stretch it receives a single point discharge, by way of a tributary, from a small domestic treatment plant with a design flow of 20,000 gallons per day. Treatment consists of primary settling, sand filtration, and chlorination.

The Connecticut Department of Environmental Protection considers the Shepaug to be in conformance with its established water quality standards. There have been, however, occasional high coliform counts measured at the Roxbury monitoring station. These occasional high counts are attributed to farm lot runoff, perhaps occurring after the spreading of manure.⁷ While good agricultural practices have been in use on most farms, some problems have been noted.

RIPARIAN RIGHTS

In Connecticut the riparian doctrine is applied to rivers and streams flowing in a defined watercourse. The owners of land contiguous (riparian) to a stream are permitted to make reasonable use of the water flowing in the stream. Reasonable use may mean limited consumption of the water, or detention of the water for a purpose such as power generation. Municipalities and private water companies have liberal authority to impound streamflow and to inundate upstream lands, subject to compensation of other riparian owners whose rights may be adversely affected. An individual has the right to the use of streamflow and access only if he is a riparian owner.⁸



...riparian owners control river access.

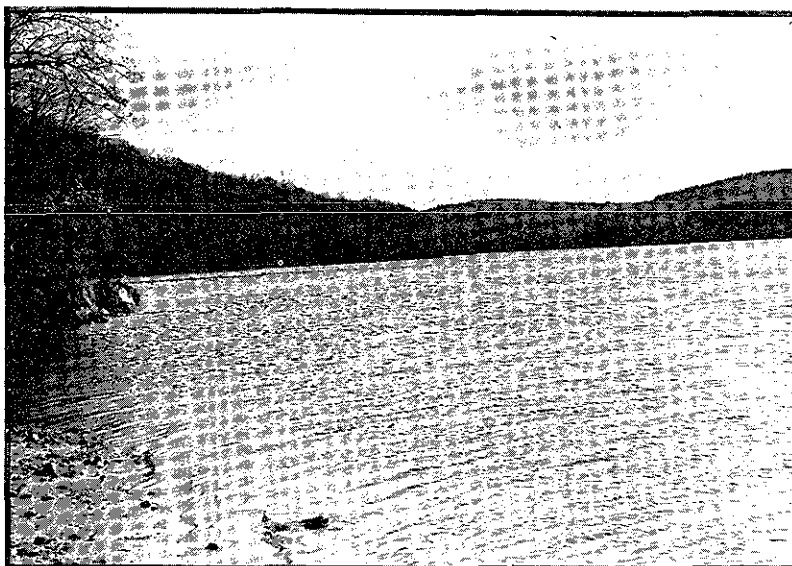
Neither the state nor the federal government consider the Shepaug above Roxbury Falls to be a navigable waterway. Riparian owners own to the center of the stream. However, the public holds an easement or right-of-way for purposes of navigation and for the passage of fish up and down the stream.

In a related matter, the state legislature authorized in 1971 the establishment of minimum stream flow standards for watercourses stocked with fish by the state. The standards would apply to structures which block the flow of a watercourse, and would ensure sufficient flow of water to maintain fish and wildlife dependent on it. When the standards eventually are established, they will be applicable to the Shepaug.

WATER RESOURCES PROJECTS

The inherent energy of the Shepaug, the Bantam and their smaller tributaries was recognized well over two hundred years ago, and turned waterwheels at dozens of locations. The foundations of many of these sites can still be seen, and serve as reminders of earlier days of industrial glory.

At the present time the principal water resources projects are Lake Lillinonah, Woodridge Lake, and the Cairns and Shepaug Reservoirs (see map on page 28). Lake Lillinonah was created in 1955 with the completion of the Shepaug dam on the Housatonic River. The dam is 147 feet high, and has a generating capacity of 47,000 kilowatts. Lake Lillinonah backs up the Housatonic for fourteen miles, and the downstream end of the Shepaug for nearly four miles.



*...Lake Lillinonah
floods four miles of
the Shepaug.*

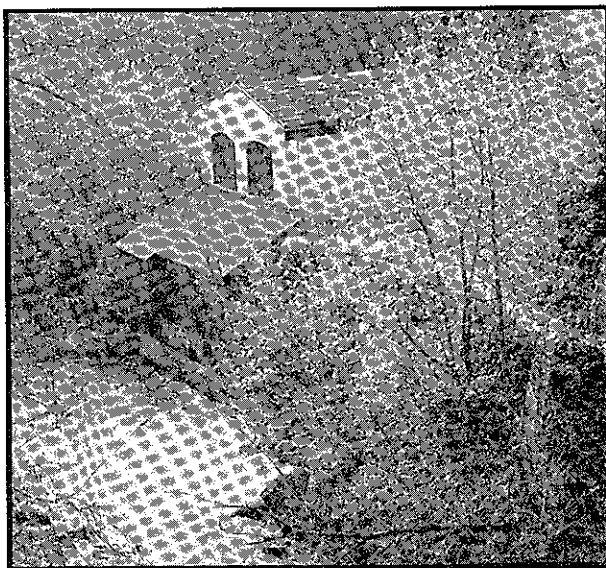
The other projects mentioned are all in the upper reaches of the Shepaug River. The Woodridge Reservoir is a recreational lake around which homes were developed. Although the lake was not constructed for consumptive uses, it has doubtless influenced the Shepaug's flow regime.

The Cairns Reservoir was completed in 1964 by the City of Waterbury to augment the storage capacity of the Shepaug Reservoir immediately downstream. The Cairns' usable capacity is 360 million cubic feet, while the Shepaug's is 77 million cubic feet.

Of the Shepaug River's 133 square mile watershed area above the Roxbury gaging station, 38 square miles are located upstream from the Shepaug Reservoir dam. At the Shepaug Reservoir, approximately 25 percent of the upstream flow is captured and diverted as municipal water supply for the City of Waterbury. The remaining 75% flows over the dam, and through a fountain at the toe of the dam. Built in 1933, the dam was not constructed in a manner which permits precise regulation of flow. The fountain, however, maintains a constant release of 2.4 c.f.s., which is a minimum release mandated by an agreement with downstream interests. During extremely dry periods, the 2.4 c.f.s. exceeds what would normally occur if the Shepaug's flow were not impeded by the dam.

Table 5 is designed to show the impact of the Waterbury diversion on downstream flows. The figures shown are monthly averages for an 11 year period, and are based on U.S. Geological Survey figures for instantaneous flow actually observed at the Roxbury gauge, and flow which might have occurred were the reservoirs not existent.

Another noteworthy water resources project occurs on the Bantam River below Bantam Lake. The river at this point flows through a deep gorge which is about 50 feet wide. The gorge is inundated upstream by a hydroelectric dam, 50 feet high. The project has not been in operation since 1974, however, when it was abandoned and its penstocks plugged. The utility company has determined that the project's 320 kW generating capacity is not sufficient to justify the replacement of its worn out machinery. The plant was constructed in 1903.



...Bantam River generating plant is no longer operating.

TABLE 5
INFLUENCE OF DIVERSION ON SHEPAUG RIVER FLOW*
A Comparison of Observed Stream Flow With Adjusted Stream Flow

Cal. Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Ave.
1961	**175	379	646	553	385	190	35	21	24	24	41	55	261
	179	394	646	553	387	202	46	23	31	27	57	69	267
1962	210	109	429	551	136	53	15	13	13	33	99	112	209
	253	130	435	550	151	67	14	15	14	39	141	155	216
1963	127	142	516	358	125	60	63	29	17	26	95	191	148
	161	148	528	367	140	77	89	36	21	30	140	217	164
1964	263	216	429	435	114	32	17	13	9	10	12	55	146
	269	216	432	437	134	39	17	15	11	11	16	82	163
1965	60	253	216	221	92	29	19	11	7	18	24	75	133
	86	343	264	252	110	31	15	7	5	29	31	102	139
1966	82	179	367	173	187	93	15	8	20	62	171	143	84
	99	228	432	204	215	106	11	5	22	77	216	159	105
1967	243	188	397	703	334	149	62	55	34	74	134	411	125
	266	211	414	700	341	164	80	73	35	98	161	435	147
1968	224	245	581	275	288	403	104	18	32	25	83	222	232
	247	261	595	285	308	411	119	16	41	32	117	257	249
1969	131	157	412	743	293	231	214	657	64	52	353	316	208
	153	181	450	748	301	246	241	684	72	63	401	331	224
1970	140	521	297	564	171	96	39	16	17	53	92	107	303
	158	527	311	570	180	115	59	1	36	68	130	174	323
1971	128	262	494	489	336	66	23	65	175	N/A	N/A	N/A	N/A
	120	316	528	501	350	83	31	94	217	N/A	N/A	N/A	N/A

*As measured at Roxbury gage.

**Top figure is actual streamflow, in cubic feet per second; bottom figure is adjusted to account for diversion from Shepaug Reservoir

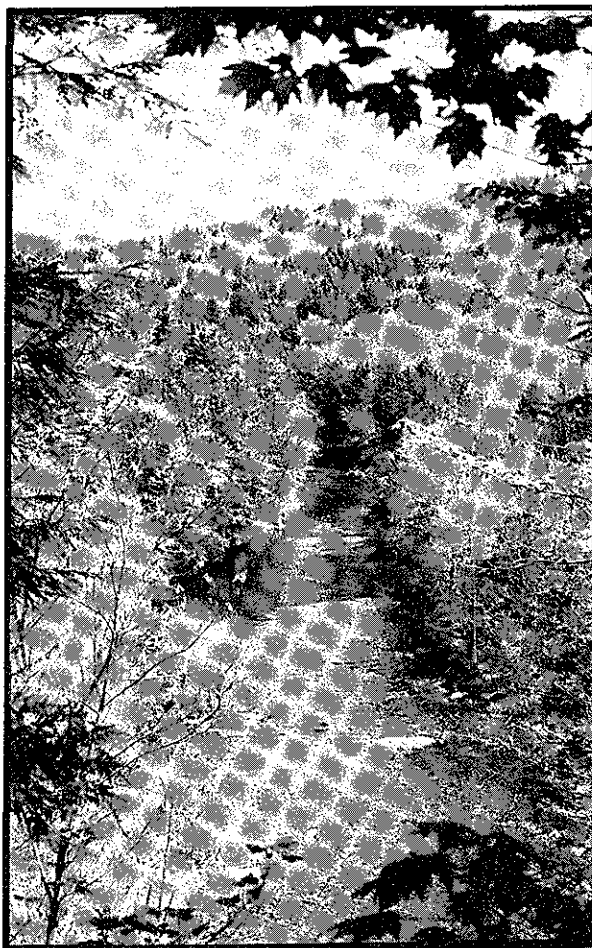
When a river is designated a component of the National Wild and Scenic Rivers System, a prohibition is placed on the development of water resources projects which would have a direct and adverse effect on the special values for which the river was designated. For this reason we must discuss those water resources projects which have been identified for possible future development on the Shepaug and Bantam Rivers, and which might be foregone should wild and scenic river designation be attained.

The first category of projects to be discussed is hydroelectric power developments. The Federal Power Commission cites two conventional hydroelectric projects which were identified in the 1955 New York - New England Inter-Agency Committee (NYNEIAC) report. One site identified in the 1955 report is in a location which is now inundated by the backwaters of Lake Lillinonah. The construction at this site would flood the Shepaug valley for approximately nine miles upstream. Generating capacity was estimated

at 7,500 kW. The first stages of a detailed investigation of this site suggested that apparent costs would be high relative to expected benefits; cost estimates, therefore, were never completed. The construction of Lake Lillinonah may have influenced the decision not to carry the investigation further. It is conceivable that the dam could be located upstream from Lake Lillinonah; however, a broader river valley in that area provides less attractive dam sites than the site initially suggested.

A second project was proposed for the Clam Shell area of the Steep Rock reservation. Installed capacity was to be 6,000 kW, with a gross head of 150 feet. The headwater would flood the valley for six miles upstream, and would inundate Washington Depot. The NYNEIAC report concluded that the site was not economically feasible for development at that time. Although resurrection of the proposal might reveal some ways in which the viability of the project would be enhanced, it is likely that attendant environmental and economic costs would continue to render the project infeasible.

A third potential project site has been identified in the upper reaches of the Shepaug's West Branch. The project would be a pumped storage development, and the lower reservoir would be constructed about 2 miles upstream of the East Branch - West Branch confluence. Normal water surface elevation of the lower pool would be 950 ft. msl. Extensive diking would provide an upper reservoir with a normal power pool elevation of 1423 ft. msl, and penstocks nearly two miles long would be needed. Projected capacity was 624,000 kW. Construction of the City of Waterbury's Cairns Reservoir about 1.6 miles downstream of the proposed Cornwall site inundated the proposed dam site, but creates a reservoir that does not provide adequate storage for secondary use for pumped storage power generation. If a cooperative agreement for



...proposed hydro-electric project would inundate the Clam Shell area.

dual use of the water resource could be achieved, the existing earthfill dam could conceivably be raised 45 to 50 feet to provide the necessary power storage and to accomodate pumped storage penstocks as originally planned. The cost of the project expansion would not be appreciably cheaper than the project as conceived, as the major costs -- those for powerhouse equipment, diking, penstocks, and dam materials -- would be essentially the same. Raising the dam by 50 feet would extend the existing reservoir upstream about 0.7 mile. Even as originally conceived, however, the extensive diking needed to create an upper reservoir, the long penstocks, and the relatively low head by present day standards result in a moderately high capital cost per kilowatt of capacity. The site cannot be considered uniquely attractive from either an engineering or economic vantage point, when other potential pumped storage sites that could serve the same power market are considered.

In summary, should the Shepaug River be protected under the Wild and Scenic Rivers Act, potential hydroelectric capacity amounting to 637,500 kW would be forfeited. Of this total, 13,500 kW of conventional capacity identified in the 1955 NYNEIAC report was deemed economically infeasible for development at that time, and power values have not increased sufficiently to the present day to change the evaluation. The pumped-storage hydro capacity, 624,000 kW, could conceivably be developed through a cooperative agreement with the City of Waterbury. However, the economics of the site would be marginal and the location cannot be considered uniquely suitable for development.

Another category of potential water resources projects centers on the use of the river for potable water supply. The upper reaches of the Shepaug and Bantam are already being tapped for this purpose. The scarcity of clean rivers of the Shepaug's size in this region has fostered recurring interest in additional capture for water supply.

References to this use of the Shepaug come from several sources. As a result of the severe drought of the mid-1960's, the Army Corps of Engineers was authorized to prepare plans to meet the long range water needs of the northeastern United States and to carry out those plans (P.L. 89-298). An early result of that authorization was the 1971 study titled "Engineering Feasibility Report on Alternative Regional Water Supply Plans for Northern New Jersey - New York City - Western Connecticut Metropolitan Area". The study catalogued more than 100 possible projects solely from an engineering feasibility standpoint, and contained no recommendations for authorization or appropriation. Two of the projects catalogued included reservoirs on the Shepaug.

More specifically, the projects included a pumped storage reservoir extending upstream from the Shepaug arm of Lake Lillinonah, tied in with a complex matrix for inter-basin transfer; and a run-of-the-river reservoir at the same location, which would store 52 billion gallons for pumping outside the basin.

The Corps of Engineers' planning was further pursued for the Northeastern United States Water Supply Study (NEWS) interim report, "Critical Choices for Critical Years," issued in 1975. The interim report deleted all references to reservoir development.

The 1974 Connecticut Plan of Conservation and Development is the official state policy document on land and water resource matters, and proposes that the Shepaug Valley be permanently committed to open space land uses, and that the Shepaug's flow be diverted for water supply purposes at a point just north of where it joins the Housatonic River in Lake Lillinonah.

In 1976, a report was prepared for the Housatonic Valley Council of Elected Officials advancing the concept of a Shepaug diversion at the same location for water supply purposes. The report estimated that such a project would deliver a safe yield of approximately 30 million gallons daily at a reasonable cost.⁹

It is apparent that the diversion projects mentioned above would involve the construction of a sill in the Shepaug arm of Lake Lillinonah which would prevent the more polluted waters of the Housatonic from mixing with the Shepaug. Conceivably, a sill could accomplish this without necessarily compromising upstream wild and scenic river values. A final determination, of course, could not be made without the benefit of more detailed plans.

PLANTLIFE & FORESTRY

One of the special values found in the river corridor is the abundance of plantlife. Where flood plains are not cleared for cultivation they are thick with trees and shrubs in varying stages of maturity. Likewise, the valley walls are an almost unbroken carpet of green. Ferns grow from cracks and crevices in the frequent rock outcrops, and the riverbanks and the ravines that disappear into the hillsides support a heavy growth of plants such as trilliums, skunk cabbage, may apples, ferns, and bloodroot, to name a few.



...ferns grow from cracks and crevices.

Most of the Shepaug and Bantam River study area is located in what the State Geological and Natural History Survey 10 terms the Northwest Hills ecoregion. As such, the following description applies:

The major regional forest vegetation is Central Hardwoods-Hemlock-White Pine. The region was formerly referred to as the Oak or Mixed Oak region (Bromley, 1935). Characteristic dominants on well-drained soils include Red Oak (*Quercus rubra*), White Oak (*Q. alba*), Black Oak (*Q. velutina*), Shagbark Hickory (*Carya ovata*), Pignut (*C. glabra*) and Bitternut Hickory (*C. cordiformis*). Chestnut (*Castanea dentata*) was formerly a major tree species in this forest zone until the Chestnut Blight (*Endothia parasitica*) decimated its populations in the 1920's. Stump sprouts of Chestnut are still common everywhere. Black Birch (*Betula lenta*), White Ash (*Fraxinus americana*), and several other Oaks (*Q. spp.*) are frequent associates. White Pine (*Pinus strobus*) and Hemlock (*Tsuga canadensis*) are frequent and locally abundant to dominant. Abandoned fields are generally dominated by White Pine, Red Cedar (*Juniperus virginiana*), and/or Gray Birch (*B. populifolia*). White Pine reaches the southern limit of its local occurrence in old fields in the region. Critical biologic habitats include old-growth forests and Black Spruce bogs. Some characteristic rare plants are New England Grape (*Vitis novae-angliae*), Hairy Wood-Mint (*Blephilia hirsuta*) and Wiegand's Wild Rye (*Elymus Wiegandii*).

There is little commercial timber cutting within the river corridor, nor are there any wood-using industries entirely dependent upon timber in the corridor. In applying the county-wide distribution of growing stock volume on commercial forest land, by forest types, to the river corridor's estimated 8,950 acres of forest land, the following figures are arrived at:

<u>Forest Type</u>	<u>Acres</u>
white pine-red pine-hemlock	2,238
oak-hickory	2,864
elm-ash-red maple	2,058
maple-beech-birch	1,790
aspen-birch	negligible

The estimated percent distribution by stand size classes is as follows:

<u>Stand Size</u>	<u>Percent</u>
saw timber stands	47
pole timber stands	31
sapling -- seedling stands	22

The estimated percent distribution of the saw timber volume by forest type is as follows:

<u>Forest Type</u>	<u>Percent</u>
white pine-red pine-hemlock	29
oak - hickory	33
elm-ash-red maple	21
maple-beech-birch	17
aspen-birch	negligible

One aspect of the forest resource that is of special interest from the wild and scenic river standpoint is a ten acre tract of 200 year old hemlock within the Steep Rock reservation, near the "Clam Shell." In light of the intense industrial and farming activities which historically have impacted this part of New England, the presence of this hemlock stand represents an outstanding attribute.



...valley walls are
carpeted in green.

FISH & WILDLIFE

Water quality and streamflow in the Shepaug are adequate to support fish and other aquatic life at all times of the year. Average dissolved oxygen levels for all months are higher than minimum state standards and those necessary for the survival of cold water fishes. Turbidity levels are low, except during periods of heavy runoff, and sediment samples give no evidence of pollution by toxic substances. DDT is present in minute amounts in bottom sediments, but not nearly enough to cause concern. Highest water temperatures occur in August, and indicate that survival of trout species would not be impaired, other factors being equal. While the Shepaug's waters are classified as suitable for fish spawning and growth, it is not known for certain whether trout reproduce in the main stem. Trout are known to reproduce, however, in the Shepaug's East branch, upstream from the Shepaug Reservoir.



...fly casting on the Shepaug.

As pointed out in other sections of this report, streamflow is at times very low in the Shepaug. However, only under unusual circumstances does flow fail to exceed 0.25 cubic feet per second per square mile (cfsm) (or 33 cfs) of drainage area at any point in the stream, which is sufficient to protect aquatic life. A value of 1.25 cfsm (or 165 cfs) is considered necessary for enhancement of the stream's fishery resources, and average monthly flows exceed this during many months of the year.

Wildlife resources are representative of several habitats. Since the corridor is generally undeveloped, the mixed deciduous forest, interspersed with stands of hemlock and white pine, is the most extensive. A century ago most of this present day woodland habitat was either farmed or cut over for charcoal production. Over the years it has gradually reverted to a mature forest.

Some of the corridor's wildlife habitat in Morris and Washington, and a larger percentage in Roxbury, consists of agricultural cropland, pastureland, and open fields and meadows.

Wetlands are most common in the upper reaches of the Shepaug and Bantam. Within the downstream segments recommended for inclusion in the Wild and Scenic Rivers System, there are approximately 1,400 acres of wetlands. Wetland habitat consists primarily of swampy areas with red maples and shrub growth, freshwater marshes, and shallow ponds. Enforcement of Connecticut's Inland Wetlands and Water Courses Act, accomplished through a permit program, can be helpful in preserving this habitat type.

The King's Mark Resource Conservation and Development Plan points out several wildlife related problems which apply to the Shepaug River area. The loss of wildlife habitat to urban development is the most pressing of these problems. Another problem needing special attention is the need to more adequately consider wildlife in the early planning stages of proposed land use changes. The King's Mark plan is a cooperative effort between the Connecticut Department of Environmental Protection and area Soil and Water Conservation Districts, assisted by the Soil Conservation Service. A list of fish and wildlife species found in the area is presented in Appendix B.

LAND USE & OWNERSHIP

For the most part, existing land use in the Shepaug and Bantam corridor is compatible with wild and scenic river objectives. Land use, of course, is critical not only in determining whether a river or river segment is eligible for the National Wild and Scenic Rivers System, but also in developing a plan for maintaining a high quality river environment in the future.

In quantifying existing land uses, it is necessary first to define the area with which this report is most concerned. This area would be considered the potential Scenic River Corridor, and would be a little more than 26 miles long. While a precise delineation of the corridor is beyond the scope of this report, a liberal estimate of its area would be on the order of 12,500 acres. This figure has been calculated to include those land and water features which could be viewed

from the river, or from roads and trails which were adjunct to the river. In some sections -- where the "viewshed" included a more distant vista-- the corridor boundary was terminated at the first ridgeline.

Table 6 indicates to what degree various land uses occur within the corridor.

Table 6

EXISTING LAND USE

	<u>Acres</u>	<u>Percent of Total</u>
Forest		
Public recreation	1,550	
*Private	<u>7,400</u>	
	8,950	71.8
Open Land		
Agriculture	2,250	
Open field & other	<u>500</u>	
	2,750	22.0
Dispersed residential	525	4.1
Institutional	175	1.4
Commercial	85	0.6
Mineral extraction	<u>15</u>	<u>0.1</u>
Total	12,500	100.0

* includes both commercial and non-commercial forest.

The proposed scenic river corridor has a total river frontage of about 52.4 miles. Most of this frontage is in private ownership, as shown in table 7. The largest bloc of non-private frontage is owned in the public trust by the Steep Rock Association, Inc.

Table 7

EXISTING RIVERFRONT OWNERSHIP

<u>Ownership</u>	<u>Frontage (miles)</u>	<u>Percent of Total</u>
Private	39.0	74.3
Private institutional	1.0	1.9
Public institutional	0.4	0.8
Public recreation	0.8	1.6
Private land trusts	<u>11.2</u>	<u>21.4</u>
Total	52.4	100.0

PLANNING & ZONING

All of the five river corridor towns are served by planning and zoning commissions, and each has a Plan of Development to guide community growth, and zoning regulations to protect the health and welfare of its residents.

Since the five towns are predominantly rural, medium to large-lot zoning is the standard where regulations are in effect. Minimum lot sizes range from one to three acres where there is frontage on public roads. For the most part, standards for interior lots not fronting on public roads, would be applicable. In most of the scenic river corridor interior lot sizes are three to four acres.

Exceptions to the large-lot, non-commercial requirements occur in three sections along the river: a small area of commercial zoning is in effect where Route 202 crosses the Shepaug in Washington; the Washington Depot commercial area fronts on the river for about 1/2 mile; and there is a small commercial zone adjacent to the dam at Roxbury Station. At present levels of development these commercial zones do not seriously detract from the river's beauty, although the Washington Depot zone could be improved aesthetically in one area by permitting vegetation to grow on the streambank.

One shortcoming of the existing zoning regulations is that they do not address the special health and safety problems posed by flood hazard areas. In light of the disastrous effects the 1955 floods had on the river valley, this could represent a serious oversight. From the standpoint of a scenic river program, regulation of flood hazard areas offers much promise in helping to preserve the natural values of the river corridor.

Other planning activities with special significance for river corridor preservation have been carried out by the Litchfield County Conservation District. Within recent years, the District has completed Streambelt Reports for Roxbury, Washington, Morris and Litchfield. Streambelt reports consist of a fairly detailed inventory of the towns' stream corridors, including the watercourses' lands subject to flooding; associated wetlands; contiguous lands with special environmental values; shorelines of waterbodies associated with streams; potential water supply sites for fire fighting; and areas adjacent to the streams, the development of which would have probable adverse environmental effects; and other areas necessary as links in the streambelt system. The reports are intended to serve as a basis for municipal regulation of the streambelts to curtail pollution and siltation, reduce the likelihood of flood loss, promote the preservation of recreation areas and scenic beauty, and to protect critical ecosystems.

Planning assistance is provided to the towns by the Northwest Connecticut Regional Planning Agency and the Litchfield Hills Regional Planning Agency. Both of these agencies have emphasized the desirability of preserving the river corridor, for both its scenic beauty and the importance of its natural functions.

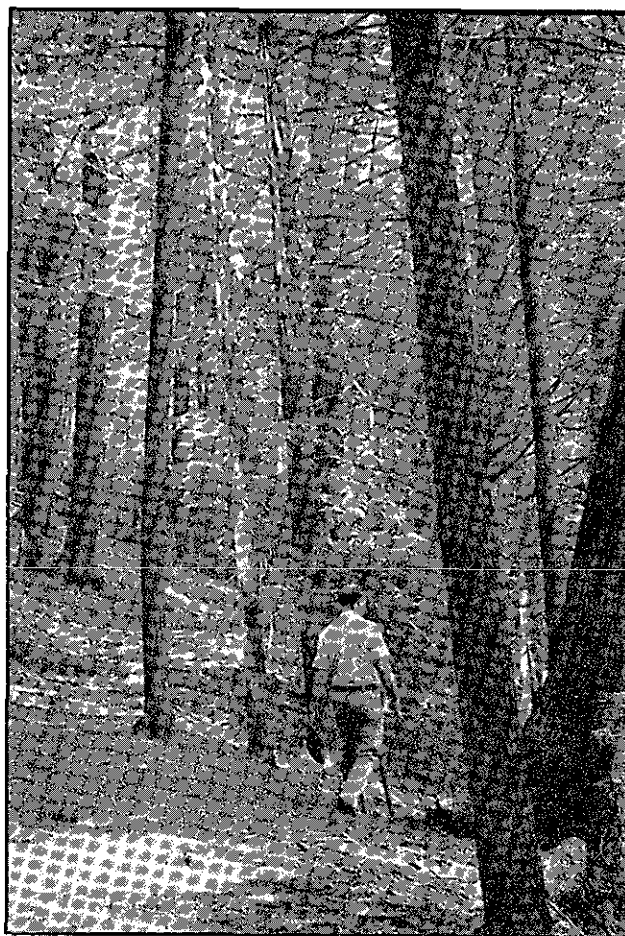
The 1974 Plan of Conservation and Development for Connecticut identifies the Shepaug Valley as proposed permanent open space and recreation, and the State Comprehensive Outdoor Recreation Plan is in agreement with this overall policy.

RECREATION & OPEN SPACE

While the Shepaug and Bantam Rivers offer pleasant recreation experiences, it is important to note that they are relatively small rivers and have a correspondingly low carrying capacity. Of the river corridor lands that are permanently protected, only ten percent are owned by state or local government. Private groups have played a larger role in preserving open space.

In the upper reaches of the Shepaug, upstream from the segment recommended for national designation, the City of Waterbury holds 4,000 acres of watershed lands for the protection of water supply. This land is closed to public recreation use. Abutting this land is another 1,200 acres held for the exclusive, and very limited, recreation use of Marshepaug Forest, Inc., a private club. Until recently, a six mile section of the Mattatuck Trail crossed the Waterbury and Marshepaug Forest lands. It was closed, however, in response to poor trail manners on the part of some of the users. Further upstream there are about 2,000 acres of Mohawk State Forest in the watershed.

Part of the 3,228 acre Wyantnock State Forest, located in Warren, is within the scenic corridor. Recreation is incidental to its primary management function. None of the property abuts the river.



...hiking in Steep Rock Reserve.

Almost half of Mount Tom State Park's 223 acres is in the scenic corridor. The property fronts on the Bantam River for about one-third of a mile. The park is managed for recreational uses. Included in the park is the 61 acre Mount Tom Pond. Rugged terrain makes access to the river very difficult.

The White Memorial Foundation is a non-profit corporation owning 4,422 acres centered around Bantam Lake. The property is open to the public and managed for conservation, education, recreation and research. Although the property is upstream from the scenic corridor, the opportunities it provides for the public make it especially important. Further upstream from the foundation property, the Nature Conservancy owns full or partial interest in several miles of lands bordering the Bantam River.

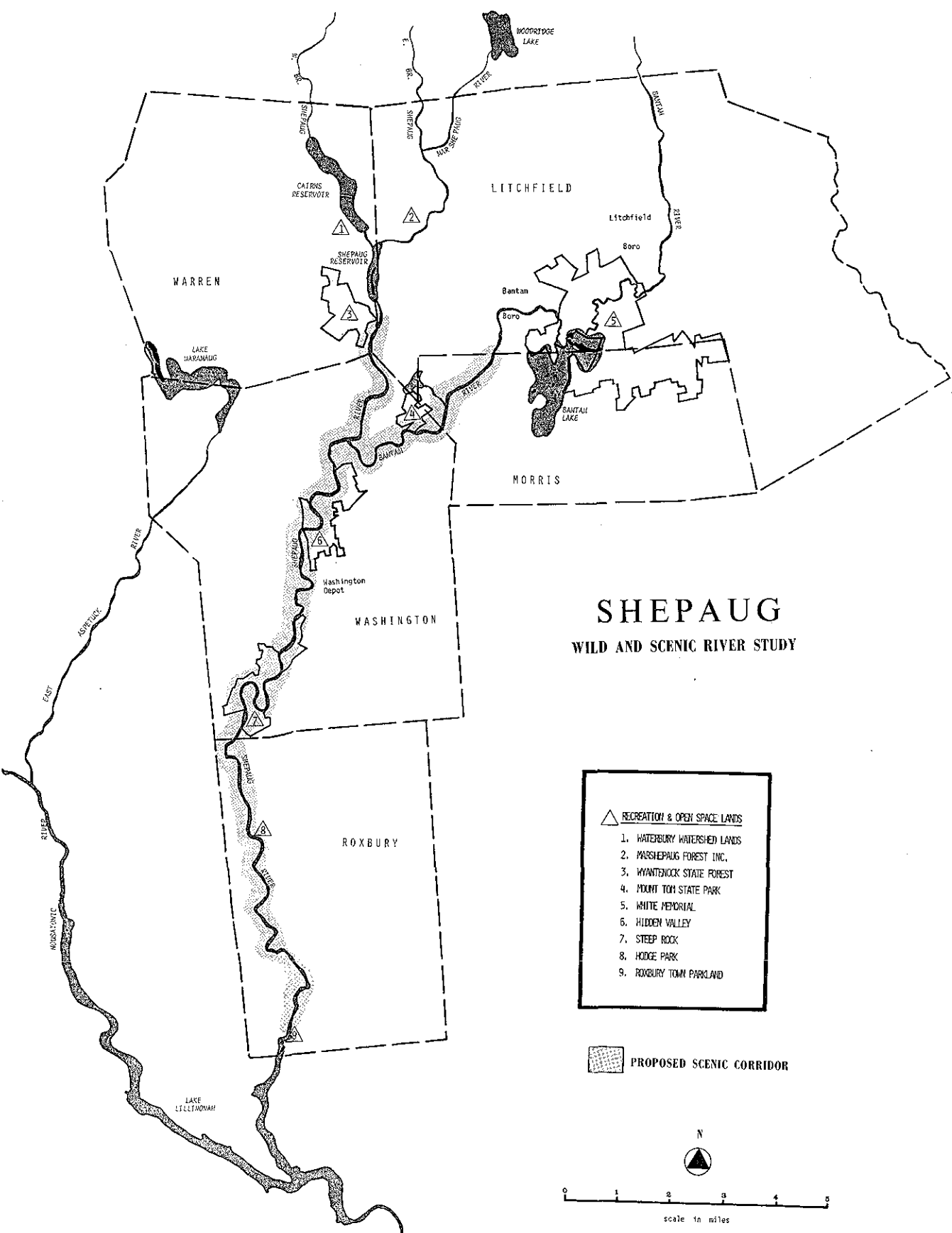
The most significant open space holding within the scenic river corridor is the 1,300 acres owned by Steep Rock Association, Inc. The Steep Rock property is in two sections along the river in Washington, and contains some of the river corridor's most outstanding features. The original deed of trust expresses a desire for "securing its preservation, improvement and maintenance for the use and enjoyment of citizens and residents of Washington and Litchfield County and of their guests and friends and of the general public". The property is undeveloped except for trails.

There are several small, publicly-owned, parks along the scenic river segment, including two state roadside picnic areas, one at the Route 47 crossing above Washington Depot, and one overlooking the Shepaug from Route 67 in Roxbury. These parks serve as "put in" and "take out" points for canoeists on the river, and are public fishing access points. Town parks along the scenic corridor consist of approximately two acres in Washington Depot, and 24 acres in Roxbury, overlooking Roxbury Falls. The Roxbury parks are posted for residents only. Roxbury Falls is a scenic attraction as well as a local "swimming hole." The scenic river corridor ends where the falls, more accurately called rapids, are stilled by the backwaters of Lake Lillinonah.

Other local organizations preserving open space include the Weantinog Heritage, Inc., with 19 acres in the river corridor, the Roxbury Land Trust, and the Litchfield Land Trust. These organizations could play a significant role in protecting the undeveloped character of the scenic river corridor.

There are no records maintained of public recreational use within the scenic corridor. The facilities do not lend themselves to good record keeping. The scenic qualities of the valley are probably enjoyed to the greatest extent by pleasure drivers using the improved and unimproved roads which parallel the river.

The estimated minimum flow necessary for good canoeing is 375 cubic feet per second, as measured at the Roxbury gage. Flows of this magnitude generally occur most frequently in the spring runoff months, and only sporadically during other months. In the period 1961 to 1971,

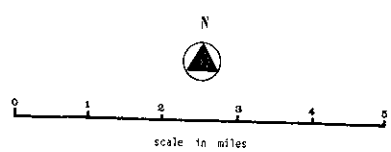


SHEPAUG

WILD AND SCENIC RIVER STUDY

- RECREATION & OPEN SPACE LANDS**
1. WATERBURY WATERSHED LANDS
 2. SHEPAUG FOREST INC.
 3. WYANTENOCK STATE FOREST
 4. MOUNT TOM STATE PARK
 5. WHITE MEMORIAL
 6. HIDDEN VALLEY
 7. STEEP ROCK
 8. HODGE PARK
 9. ROXBURY TOWN PARKLAND

PROPOSED SCENIC CORRIDOR





...canoe race
finish at
Hodge Park.

the 375 cfs level occurred on an average of 15 times during March, 16 times during April, and 5 times during May. It is important to note that for several years during this eleven year period drought conditions were prevalent. Daily readings at the Roxbury station were discontinued after 1971.

The general public has rather limited access to the Shepaug and Bantam for fishing, with two access points in Washington and one in Morris. There are private clubs active along the river which have leased several miles for use by their members. They also stock the river in these areas.

CONCLUSION

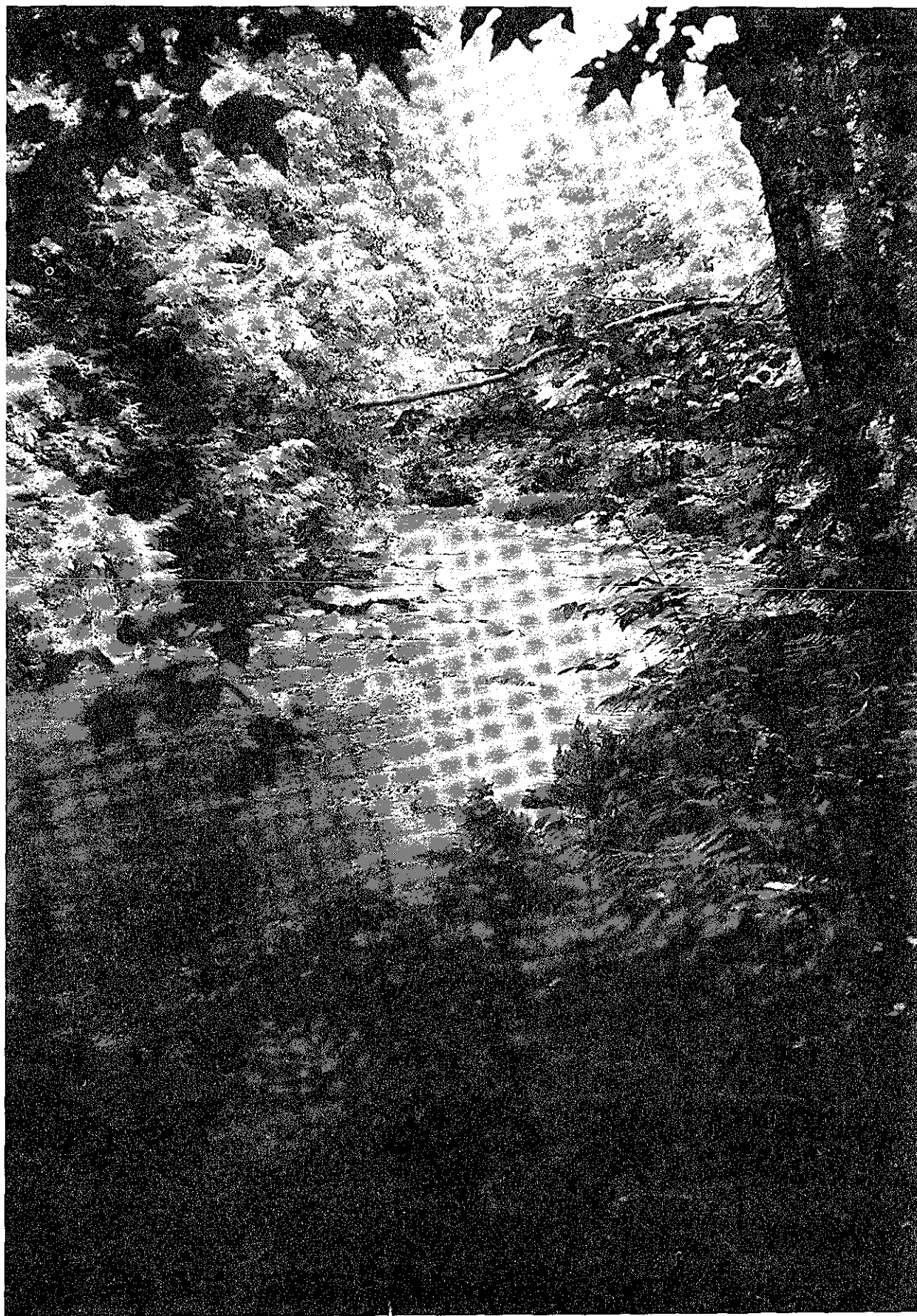
A 26 mile segment of the Shepaug River and its tributary, the Bantam River, has been found to be free-flowing and to have outstanding qualities which qualify it for inclusion in the National Wild and Scenic Rivers System. The eligible segment begins below the Shepaug Reservoir Dam on the Shepaug, and below the Borough of Bantam on the Bantam River. The eligible segment ends where Roxbury Falls enters Lake Lillinonah in the town of Roxbury. In light of the accessible, but largely undeveloped character of the river corridor, a "Scenic" classification is appropriate.

The outstanding qualities of the river corridor are most apparent in its scenic attributes. For most of its length deep valleys with numerous rock outcroppings and heavily forested hillsides foster a

sense of solitude for the visitor. This is contrasted at times with pastoral farm settings. In a sense, the river valley may be viewed as a cameo of the natural values and charm of southern New England.

Less obvious is the role the river corridor plays as a laboratory for archaeologists. Little is known at this time of the pre-history of human habitation in Connecticut, but recent discoveries in the Shepaug's floodplain hold great promise for yielding significant archaeological information.

It is important to note here that although the upstream areas of the Shepaug and Bantam, and the Shepaug arm of Lake Lillinonah, are not considered eligible for the National Wild and Scenic Rivers System, most of their shorelines are pleasing environments, and efforts should be made by the appropriate towns to plan for their future conservation. There is a strong possibility that, as an outgrowth of the Housatonic Wild and Scenic River study now being conducted, a conservation plan may be developed for Lake Lillinonah by the towns that border it. Coordination of planning efforts between the Shepaug and Housatonic valleys would likely be of significant benefit to the future of both.



WILD & SCENIC RIVER STRATEGIES

Having found that segments of the Shepaug and Bantam Rivers qualify for inclusion in the National Wild and Scenic Rivers System, the next step is to outline a strategy for protecting the scenic, archaeological, cultural and other values. The strategy would consist of preparing a comprehensive river management plan and determining responsibility for administering the river and its immediate environment in accord with the plan.

ADMINISTRATIVE ALTERNATIVES

The Wild and Scenic Rivers Act permits considerable discretion in determining the mechanism for administering a component of the National System. The administrative alternatives to be considered are federal, state, or local management, or combined state/local management.

FEDERAL MANAGEMENT ALTERNATIVE

One alternative which must be considered is administration by a federal agency such as the National Park Service. This would involve preparation of a management plan, and either direct or cooperative federal-state-local management of the river corridor. However, there are no federal lands within the river corridor, or anywhere near to it, which would lend a sense of reasonableness to this alternative. In addition, the citizens of the affected towns along the river adhere to a general philosophy of self-reliance, and believe in the virtues of "home-rule". The strong interest shown by the local governments in managing the river area indicates that a more appropriate federal role could be that of limited technical assistance, such as aid to the state or local managing agency in applying for inclusion in the National System.

When a direct federal management role is ruled out, remaining alternatives, of necessity, rely on state or local initiative. The Wild and Scenic Rivers Act allows for this contingency in Section 2(a)(ii), by authorizing that the National System may include not only federal rivers, but also rivers

... that are designated as wild, scenic, or recreational rivers by or pursuant to an act of the legislature of the State or States through which they flow, that are to be permanently administered as wild, scenic or recreational rivers by an agency or political subdivision of the State or States concerned without expense to the United States, that are found by the Secretary of the Interior, upon application of the Governor of the State...to meet criteria established in this Act and such criteria supplementary thereto as he may prescribe...

Connecticut does not have an established system for recognizing and protecting its free flowing rivers, nor an existing mechanism for bringing about an administrative program for the Shepaug and Bantam. The three remaining alternatives are therefore considered in absence of any existing state system for river protection.

LOCAL MANAGEMENT ALTERNATIVE

Under the local management alternative, the five river corridor towns of Roxbury, Washington, Litchfield, Morris, and Warren would be responsible for managing the river. This could be accomplished through a compact among the towns which reflects their unified commitment to a locally managed Wild and Scenic River. Existing State Statutes 7-148 and 7-330 are sufficient to establish a River Board and bring this about.

The cooperative effort would be formalized in the adoption of a comprehensive management plan, prepared by the towns with technical assistance available from state and federal agencies. The Commissioner of the Department of Environmental Protection could offer an important consultation and coordination service under this alternative, assisting both the towns and the legislature, and serving in a liaison role between the state interests and the Interior Secretary.

Under this administrative arrangement, all operating and maintenance costs would likely be borne locally. Acquisition or development which might be necessary to protect the river and ensure public enjoyment would be eligible for 50% matching Land and Water Conservation Fund grants through the Department of Environmental Protection, but would be competing for priority with other local and state projects.

As discussed earlier, this alternative would be pursued in accordance with Section 2(a)(ii) of the Wild and Scenic Rivers Act, and the following actions would have to be taken for the Shepaug to become a part of the National System:

1. The State legislature must officially recognize it as a wild, scenic or recreational river.
2. The governor must forward a letter to the Secretary of the Interior requesting that the river be added to the National System, including a copy of the Comprehensive Management Plan, and documenting what measures have been taken to protect the river.
3. The Secretary must determine that all federal requirements are met, and that meaningful efforts are being made to protect the river corridor.

STATE MANAGEMENT ALTERNATIVE

This alternative would result in the Department of Environmental Protection managing the river corridor in accord with Wild and Scenic River objectives. It would be necessary for the state to devise a comprehensive management plan which would result in the permanent protection of the river's qualities, and opportunities for public enjoyment of those qualities.

The success of the state's management would likely depend heavily on local interest, support and cooperation. This would be especially critical since many of the tools for protecting the river corridor, such as zoning ordinances, building codes, and inland wetlands enforcement, for example, require a strong sense of purpose at the local level.

The local role under this alternative could consist of representation on an advisory board which would assist in formulating the comprehensive plan for the river, and which would serve as a liaison between the state and the river corridor communities.

The state would bear all costs for operation and maintenance under this administrative arrangement, although it would be possible that local governments might relieve some of the burden by extending routine services such as trash collection and police patrol to recreational use areas. Acquisition and development which might be necessary to protect the river and ensure public enjoyment would be eligible for 50% matching grants through Connecticut's yearly apportionment from the Land and Water Conservation Fund.

As with the local management alternative, this alternative would be pursued in accordance with Section 2(a)(ii) of the Wild and Scenic Rivers Act. Therefore, for the Shepaug to become a part of the National Wild and Scenic Rivers System it would be necessary for the state to first prepare the comprehensive plan for the river and resolve administrative issues. Next:

1. The State legislature must officially recognize the Shepaug as a wild, scenic, or recreational river.
2. The Governor must forward a letter to the Secretary of the Interior requesting that the river be added to the National System, including a copy of the Comprehensive Plan, and documenting the measures that have been taken to protect the river.
3. The Secretary must determine that all federal requirements are met, and that meaningful efforts are being made to protect the river corridor.

COMBINED STATE/LOCAL ALTERNATIVE

Under this alternative, local units of government would formally join with the Department of Environmental Protection to manage the river corridor in accord with Wild and Scenic River objectives. This alternative would not differ greatly from either the state or the local management alternatives, but would represent a more unified approach toward the goal of a Wild and Scenic River. Legislation would be necessary to create a state-local commission.

This alternative allows for substantial responsibility and authority on the part of those towns which have an outlook of stewardship toward the river. At the same time, the State could fill any void which might be created should one or more of the affected towns not be willing to commit themselves to the stewardship responsibilities attendant to a Wild and Scenic River.

The financial burden of operation and maintenance could be more broadly distributed under this alternative, as could the costs of any necessary acquisition and development.

If National Wild and Scenic River status were sought for the Shepaug under this alternative, it would be necessary for the comprehensive management plan to be developed and adopted, with the State legislature officially recognizing the river either before or after the state/local agreement is made. Following this:

1. The Governor must forward a letter to the Secretary of the Interior with the Management Plan requesting that the Shepaug be added to the National Wild and Scenic Rivers System, and documenting the measures that have been taken to protect the river.
2. The Secretary must determine that all federal requirements are met, and that meaningful efforts are being made to protect the river corridor.

Summary

The administrative arrangements discussed above are certainly not exhaustive. It is conceivable that other types of arrangements could be devised -- and be effective in preserving the Shepaug and Bantam corridor. Under any of the options federal technical assistance would be available during the formulation of the management plan. This would help to assure that the plan would have the greatest likelihood of being acceptable to the Secretary of the Interior. The reason that the plan must be acceptable to the Secretary of the Interior is that a state or locally managed river is added to the National Wild and Scenic Rivers System by the Secretary's direct action. A federally managed river is added to the System by act of Congress.

Our recommendation is that the Local Management Alternative be pursued, given the strong local sentiment for responsible action.

A GUIDE TO ACTION

The aesthetic appeal of the Shepaug and Bantam River environment is the result not only of natural forces, but of human actions as well. The river environment is presently maintained at a high quality level, and this, in part, is why it is eligible for the Wild and Scenic Rivers System. But the future of this pleasant environment has pretty much been left to chance, and to the continued good stewardship of property owners along the river. As population and development pressures in the area increase and conditions change for individual landowners, the river's future will become more uncertain.

For this reason, the key to the preservation of the Shepaug and Bantam River corridor lies in the development of a comprehensive plan which will serve as a guide for protecting the natural and scenic resources and other special qualities of the river and adjoining lands. The adoption of such

a "management" plan means that there will be both an agency formally committed to keeping the river environment in a high quality condition, and a planned course of action to attain that goal. Our recommendation is that the comprehensive plan be the responsibility of the local government managing agency, and be prepared with assistance from the regional planning agencies which serve the towns.

The Plan should be tailored to the capabilities of the river corridor towns, and be prepared with the benefit of thorough consultation between the managing agency and town planning and zoning commissions, conservation and inland wetlands commissions, private conservation groups and land trusts, and private citizens who will be affected by the plan. The Connecticut Department of Environmental Protection has a State-wide perspective on natural resource protection, and expertise in the management of natural resources. This perspective and expertise would be of great value in the preparation of the comprehensive plan, and in the later resolution of management problems as they might arise.

The comprehensive plan requires a level of detail and a knowledge of the local environment which are beyond the scope of this report. The following is intended to serve as a conceptual framework for the development of the plan.

MANAGEMENT OBJECTIVES

A river management plan for the Shepaug and Bantam would be developed with specific objectives in mind. The Wild and Scenic Rivers Act addresses the management plan by stating that "... primary emphasis shall be given to protecting its esthetic, scenic, historic, archaeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area."

With this and other wording within the Act taken into consideration, the following objectives are recommended for the comprehensive plan and its implementation:

1. The preservation of a free-flowing river.
2. The maintenance of high water quality.
3. The protection of natural and scenic features along the river.
4. The protection and interpretation of historic and archaeologic values.
5. The preservation of the farming heritage in the valley.
6. The provision of opportunities for public enjoyment.
7. The prevention of overuse and misuse of the river environment.
8. The allowance of compatible activities along the river which do not substantially interfere with wild and scenic river objectives. This would include the harvest of sawtimber trees when carried out according to sound forest management practices.



*...a planned course
of action is needed
for protecting the
river.*

DELINEATING A RIVER CORRIDOR

The Wild and Scenic Rivers Act requires that each component of the National Wild and Scenic Rivers System be administered in such manner as to protect and enhance the values which caused it to be included in the system. Since a river's values extend beyond the river itself and are intrinsically tied to adjacent land areas, it is necessary to determine the boundaries of those adjacent areas so that a plan can be devised for a definite jurisdiction. The river and adjacent areas are commonly referred to as the river corridor, which has been discussed earlier in this report.

It was also mentioned earlier that the detailed survey necessary to accurately define the corridor would be a function of the managing agency. The 12,500 acre figure cited previously, and used in the "Principles and Standards" analysis later, cannot be considered more than a rough estimate. It is possible that a detailed survey would identify a significantly larger or smaller area.

As an approach to defining the river corridor, a two-zone concept is recommended. This could be both reasonably administered and effective in meeting wild and scenic river objectives. It would entail the establishment of two boundary limits within the corridor. The first, or inner, boundary limit would consist of the river and its immediate environment. The immediate environment might include the 100 year flood plain, wetlands adjacent to the river, special environmental features, and a buffer zone between the river and any man-made developments. This

would roughly approximate the Streambelts which have been reported on by the Litchfield County Conservation District for several of the area towns, and described in the Planning and Zoning section of this report.

The second, or outer, boundary limit would include the land area beyond the river's immediate environment but on which activities might still have an effect on the river's scenic values. For example, much of the Shepaug Valley's charm and esthetic appeal derives from the heavily forested hillsides and pastoral farm scenes within view of the river. Incompatible land uses might include such things as high density housing, commercial billboards, and air, water or noise pollution-causing activities.

If the Shepaug's special values are to be protected, it will be necessary to ensure that only compatible land uses are undertaken within the second boundary limit, and that the inner boundary limit - the river's immediate environment - be kept in farming uses or in as near to a natural condition as possible.

RESOURCE PROTECTION TECHNIQUES

Natural, scenic and cultural features are the focal point of the Scenic River Plan, and consist of fish and wildlife habitat; wetlands; exceptional vegetation; rock outcrops; escarpments; vistas; and historic, archaeological and other features which add to the special appeal of the proposed Scenic River corridor. It is important that a detailed inventory be made of these features, perhaps using the Streambelt Reports as a starting point. Assistance in developing this inventory could likely be obtained from the Department of Environmental Protection, the regional planning agencies, the Audubon Society, the State Historic Preservation Officer, local historical societies, educational institutions, the American Indian Archaeological Institute, and knowledgeable local residents who support the idea of preserving the river corridor.

The comprehensive plan will be most concerned with those features which occur within the river's immediate environment -- the inner corridor boundary limit. In some cases this inner corridor is comprised of inland wetlands and waterways. Thus, it is recommended that they be protected by the stringent application of regulations pursuant to the Connecticut Inland Wetlands and Water Courses Act.

Other areas within the inner boundary are not classified as wetlands, but are subject to periodic flooding. Since development within these areas would jeopardize public health and safety, actions should be taken to prevent such development. This could be done under the provisions of the National Flood Insurance Program. The recommended course of action would be to have actuarial rate studies done by the Department of Housing and Urban Development as soon as possible for the 100 year flood zone. Flood plain zoning should be established by amending existing zoning regulations.

If flood plain zoning is not carried out, an alternative would be for the towns or for the Connecticut Department of Environmental Protection to establish stream channel encroachment lines to discourage development in the 100 year flood plain. Under this program, no obstruction or encroachment is permitted in the flood prone areas without a permit first being issued. Encroachment lines have been established along 1/2 mile of the Shepaug in Washington Depot, and could be established along other sections of both the Shepaug and the Bantam.

Enforcement of Inland Wetland and Flood Hazard Area regulations in the Act can help preserve much of the inner corridor, but are not applicable to the entire area. For this reason, some amendments to existing regulations might be in order. For example, Inland Wetland regulations might be amended to extend coverage to all lands within a certain distance of the river. Similar results might be obtained through zoning provisions requiring a setback of 100 feet or more from the river, and a minimum river frontage per building lot, as is required for road frontage. In some other communities the natural setting has been maintained by restricting the removal of plant material on building lots. This could be effectively applied to both the inner corridor and the outer corridor. A native plant material buffer zone is especially important where sight lines take in unattractive settings along the river, as in certain sections of Washington Depot.

The outer corridor would include the land area beyond the river's immediate environment, but on which man's activities would still have an effect on the river's values. It is important that efforts be made to maintain only compatible land uses in this outer zone, preserving the aesthetic appeal of wooded hillsides and pastoral farm settings. Large lot zoning could help to achieve this where the land is still forested. No truly effective means has been found yet to preserve agricultural land use, but the application of Connecticut Public Act 490 provisions allowing for preferential tax assessment might be employed on an interim basis for both agricultural and forest lands, and open space in general. Public Act 490 relieves the property tax burden on large, open space holdings, and thus enables the landowner to refrain from involuntarily placing the land on the market for development.

Another approach to controlling land use, suggested in the Connecticut Comprehensive Outdoor Recreation Plan, is that, in view of the State's long-range interest in the expanded use of the Shepaug as a source of potable water supply, "special district zoning" might be put into effect to protect the river's watershed. The significance of this approach is that it encompasses more than just the Scenic Corridor, and recognizes that watershed activities outside of the corridor can have an adverse influence on the river.

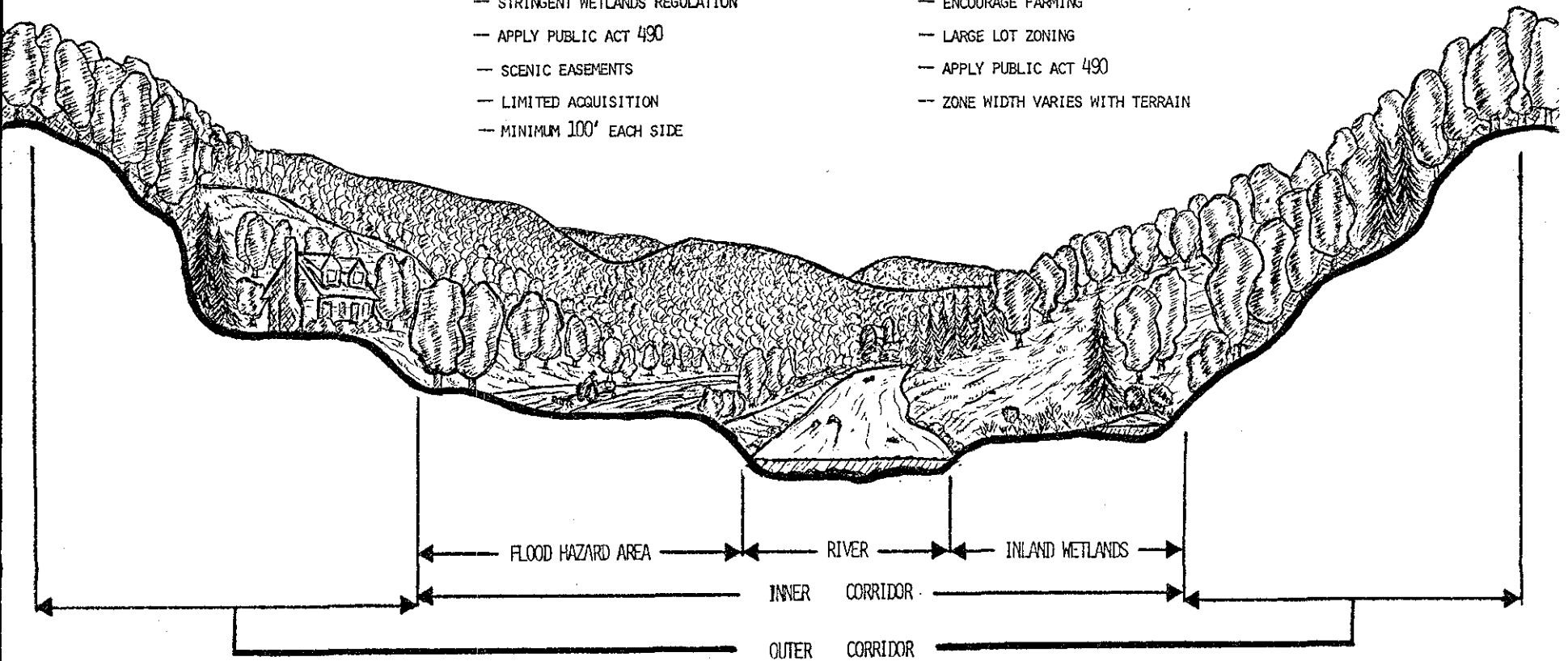
SCENIC RIVER CORRIDOR

INNER CORRIDOR

- ZONE OF MAXIMUM PROTECTION
- DISCOURAGE DEVELOPMENT
- ENCOURAGE FARMING
- STRINGENT FLOODPLAIN ZONING
- STRINGENT WETLANDS REGULATION
- APPLY PUBLIC ACT 490
- SCENIC EASEMENTS
- LIMITED ACQUISITION
- MINIMUM 100' EACH SIDE

OUTER CORRIDOR

- ENCOURAGE COMPATIBLE LAND USES
- PROHIBIT INCOMPATIBLE LAND USES
- PRESERVE SCENIC VISTAS
- ENCOURAGE WOODED HILLSIDES
- ENCOURAGE FARMING
- LARGE LOT ZONING
- APPLY PUBLIC ACT 490
- ZONE WIDTH VARIES WITH TERRAIN



The suggestions offered in the preceding paragraphs are mostly of a regulatory nature. The good stewardship exercised in the past by private landowners suggests, however, that voluntary efforts might continue to be an effective tool in protecting the valley's scenic appeal. While the Public Act 490 procedure is a voluntary one, it is most applicable to large land holdings. Owners of both large and small holdings can help preserve the corridor by abstaining from development, even though development may be legally permitted. The abstention could be made more permanent by incorporating a development restriction, or covenant, within the deed, which would also be binding on future owners of the parcel of land in question.

Another method would be the donation of scenic easements to the towns, the State, the river management agency or to a land trust. Substantial benefits can sometimes accrue to the donor not only through property tax relief, but through income tax relief as well. In addition, a public agency receiving a donation of this sort can, under certain conditions, apply the value of the donation toward a matching grant from the Land and Water Conservation Fund, which is administered through the State by the Heritage Conservation and Recreation Service.

ACQUISITION POLICIES

Generally, there would be only two situations where it might be necessary for the managing agency to acquire real property: (1) where a specific parcel is threatened with development which would seriously detract from the river's special values and there is no other way to prevent the development, and (2) where a specific parcel is needed for public access or use -- such as a canoe launch site or a picnic area.

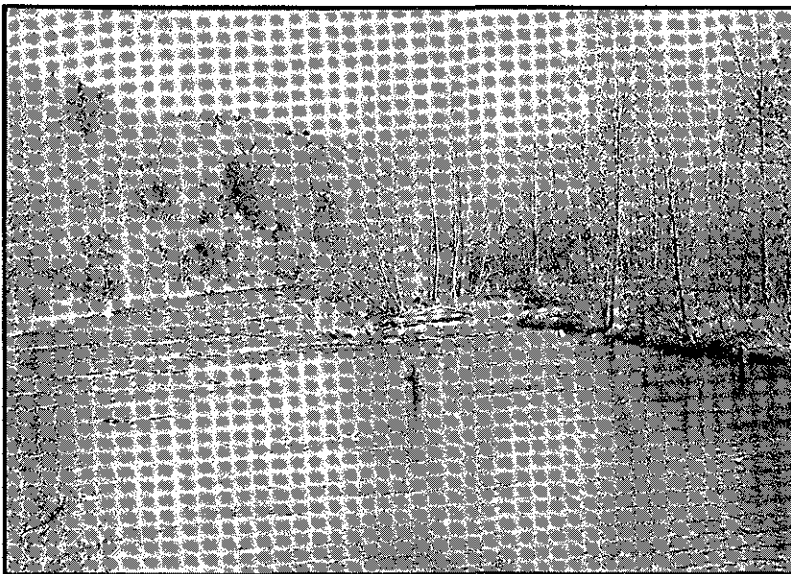
It is probable that there will be some critical areas along the river which cannot be protected from incompatible development through the techniques described in the previous section. In those cases a cash outlay may be necessary to acquire a scenic easement or fee title to the land. When the critical areas are inventoried early in the planning process, it will be possible to anticipate where regulatory procedures will not be adequate to protect the natural or cultural resources. It would be desirable at that point to establish a priority list for the acquisition of lands or interests in lands, and perhaps try to negotiate at an early stage voluntary protective action by the landowners.

Occasions will likely arise when other, less critical, parcels or tracts of land become available for acquisition -- perhaps by donation or at less than fair market value. An evaluation will need to be made on those occasions to determine to what degree acquisition of the property will aid in achieving Scenic River objectives. Generally, such opportunities should be taken advantage of.

RECREATION

It was pointed out in several sections of this report that the Shepaug and Bantam Rivers are relatively small, with low volume flow; and while

the river and its environment offer meaningful recreation experiences to canoers and kayakers, hikers, picnickers, sightseers, and others, it cannot be considered a major recreation resource. Natural limitations on recreation use are also imposed by the narrowness of the valley floor, and by existing land uses. It is important that opportunities be available for the public to enjoy its recreational attributes, but it is most important that the river's aesthetic charm and natural and cultural values be preserved. Therefore, the recreation component of the comprehensive plan should be geared to securing appropriate, but limited, areas for public use and access, and to preventing possible deterioration of the natural resource values through overuse.



...public fishing access is presently restricted.

The comprehensive plan would inventory existing recreation facilities and uses, and would ascertain where additional use might be accommodated. Of course, the Steep Rock Association property represents the single most important recreation facility in the river corridor, and so the management agency would do well to establish good lines of communication with the trustees. Through river corridor planning, the management agency might assist the Association in alleviating existing problems of concentrated use and motor vehicle traffic at Steep Rock. The agency might also investigate the potential for diverting some types of recreational use to areas outside of the Scenic River corridor which are more able to withstand them.

Canoe access to and from the Shepaug and Bantam could be improved by providing designated points of access and parking at Stoddard Road in Litchfield, or as a reclaimed use of the quarry a short distance downstream in Morris. A cooperative agreement might also be arranged with the City of Waterbury for parking and river access just below the Shepaug Reservoir. At present, most canoes are taken from the river at Hodge Park in Roxbury. Several miles of additional canoeing might

be enjoyed if a take-out point were secured further downstream, and portage permitted around the low dam at Roxbury Station.

In general, persons wishing to canoe on the Shepaug during the limited period of high water flows would be well served if signs denoted legitimate access points. This might also lessen the incidence of trespass by boaters who, out of ignorance, cross private property for access.

Roadside rests at Hodge Park and Bee Brook are modest facilities that serve a valuable public purpose. The feasibility of creating one additional facility of this nature, perhaps near the Route 202 crossing, might be considered by the managing agency.

Perhaps the most significant potential recreation resource is found in the abandoned railroad right of way which parallels the Shepaug from Roxbury Falls to its confluence with the Bantam, and then up the Bantam corridor and into the White Memorial Foundation property in Litchfield. The railway bed is in serviceable condition for most of its length, and could permit optimum enjoyment of the river valley by hikers, horse-back riders and cross-country skiers. It is recommended that public use easements or fee title be acquired to segments of the right of way as opportunities arise. Trail use of the right of way might be tied in with public fishing access at selected sections of the river, since fishing access is very limited for the general public.

The establishment of a trail along the old railroad bed would also lend itself to convenient patrolling of the river corridor so that proper authorities could be alerted to adverse changes in land use, and possible misuse by recreationists. A cooperative agreement might be arranged between the Scenic River managing agency, the Steep Rock Association, and/or the White Memorial Foundation for the routine patrol of the corridor. High school aged students might be called on to form a club whose purpose would be to monitor river use and organize occasional river clean-up campaigns.

Recreation management might further be aided through educational efforts directed at local schools. Often, the process of simply creating an awareness of the environment's special values, and of what constitutes good "river manners" will help to alleviate problems stemming from misuse or abuse. Informative signs placed at designated access points could remind visitors of the need to respect private property rights and to properly dispose of refuse. The managing agency could extend this information in the form of a brochure, which will also acclimate the visitor to access points and to special features in the river valley.

WATER RESOURCES PROJECTS

The objective of preserving the river in its free-flowing condition is fundamental to the management of any nationally designated river. Activities which might impede the river's free-flowing condition would basically consist of alteration of the river's configuration, the placement of structures in the river, or the impounding or diverting of the river's waters by dams or weirs.

Most activities of this nature can be prevented under the provisions of the Inland Wetlands and Water Courses Act, which is administered by the towns. The construction of dams for water supply purposes is, however, not subject to inland wetlands restrictions. The Commissioner of Environmental Protection has regulatory authority over such structures, and over other matters related to streamflow. A third level of authority would be that vested in the Army Corps of Engineers under the Section 404 permit program.

The comprehensive plan would need to address policies and procedures for dealing with attempts which might be made to change the river's flow regime. Protection afforded against water resources projects by the Wild and Scenic Rivers Act will be discussed later in this chapter.

WATER QUALITY MAINTENANCE

The water quality in most of the proposed Scenic River segment is very good. That section of the Shepaug from its confluence with the Bantam to the Shepaug Reservoir is classified "A," and the remainder of the Shepaug and Bantam is classified "Bs." As such, the entire reach is considered suitable for bathing and other forms of recreation, and for cold water fisheries, including fish spawning and growth. The objective would be to maintain water quality at this level, and enhance it where possible. Existing and potential problem areas affecting water quality include industrial discharges in Bantam, the Litchfield and Gunnery School sewage treatment plants, runoff from paddocks and farmlots, and field and streambank erosion. Other harmful activities may also be proposed outside of the corridor, but within the watershed. The management plan should address these matters and lead to a coordinated program for detecting, monitoring and abating-pollution sources. The Department of Environmental Protection and the Soil Conservation Service should be consulted for technical assistance in these matters.



...careless excavation can be unsightly and cause water quality problems.

COORDINATION

One of the most important functions of the comprehensive plan would be to establish a coordination mechanism for the planning, zoning, and other regulatory activities and decisions of the individual towns as they pertain to the Scenic River Corridor. The town commissions which presently have these responsibilities would continue in their usual role, but would work in a cooperative atmosphere with the Scenic River agency to adopt, for example, minimum standards for zoning in the corridor; rigid permit procedures for sand and gravel extraction; special emphasis in their Town Plans on the importance of river corridor preservation; regulations discouraging development in flood hazard areas; and a high priority for the preservation of Shepaug and Bantam wetlands.

It would be most desirable for the management agency to have, as a routine matter, the opportunity to review and make recommendations on these actions, and on development proposals, so that the corridor can be given the special recognition it deserves. Especially important is the need to review development proposals which might destroy known or potential historic and archaeological sites.

The management agency should also coordinate reviews of proposed development projects by the King's Mark Environmental Review Team. The team, funded by private agencies, consists of professionals having expertise in a wide range of disciplines, for Federal, State and local agencies, who can undertake an environmental inventory and evaluation of a site proposed for major residential, commercial, industrial or other significant activity. Their review service would aid greatly in making sound land use decisions in the river corridor.

In a related matter, it is important that the management body develop policy positions on such things as bridge crossings, road improvements and mineral extraction within the Scenic Corridor, and on watershed activities which, though outside the corridor, might still have an adverse affect on it. Bridge and road design, construction and improvement should be carefully monitored to insure that, when they take place, it is with a sensitivity to the natural and scenic values of the corridor.

An activity such as mining should be discouraged unless it is well screened from public view, adequate provisions are made to prevent stream damage, and acceptable steps will be taken to restore the site afterward. This should be the case wherever mining may be proposed within the watershed.

Also in the way of coordination, it would be worthwhile to consider extending the planning process to the upstream areas of the Shepaug and Bantam, and to the Shepaug arm of Lake Lillinonah. Although these areas are not eligible for the National Wild and Scenic Rivers System, they offer pleasing environments, and there would be obvious advantages to a basin-wide planning effort. The possible development of a conservation plan for Lake Lillinonah as an outgrowth of the Housatonic Wild and Scenic River study has previously been noted.

An especially significant opportunity exists for coordinating the Scenic River plan with planning efforts being carried out under the Connecticut Areawide Waste Treatment Management Planning Program. The program entails a two-pronged approach to solving water quality problems, and focuses mainly on non-point sources of pollution. The program stresses systematic planning to find workable solutions to problems, and also stresses follow-up management to insure that those solutions are carried out properly. The regional planning agencies and the Connecticut Areawide Waste Treatment Management Planning Board are the agencies with primary responsibility for the program.

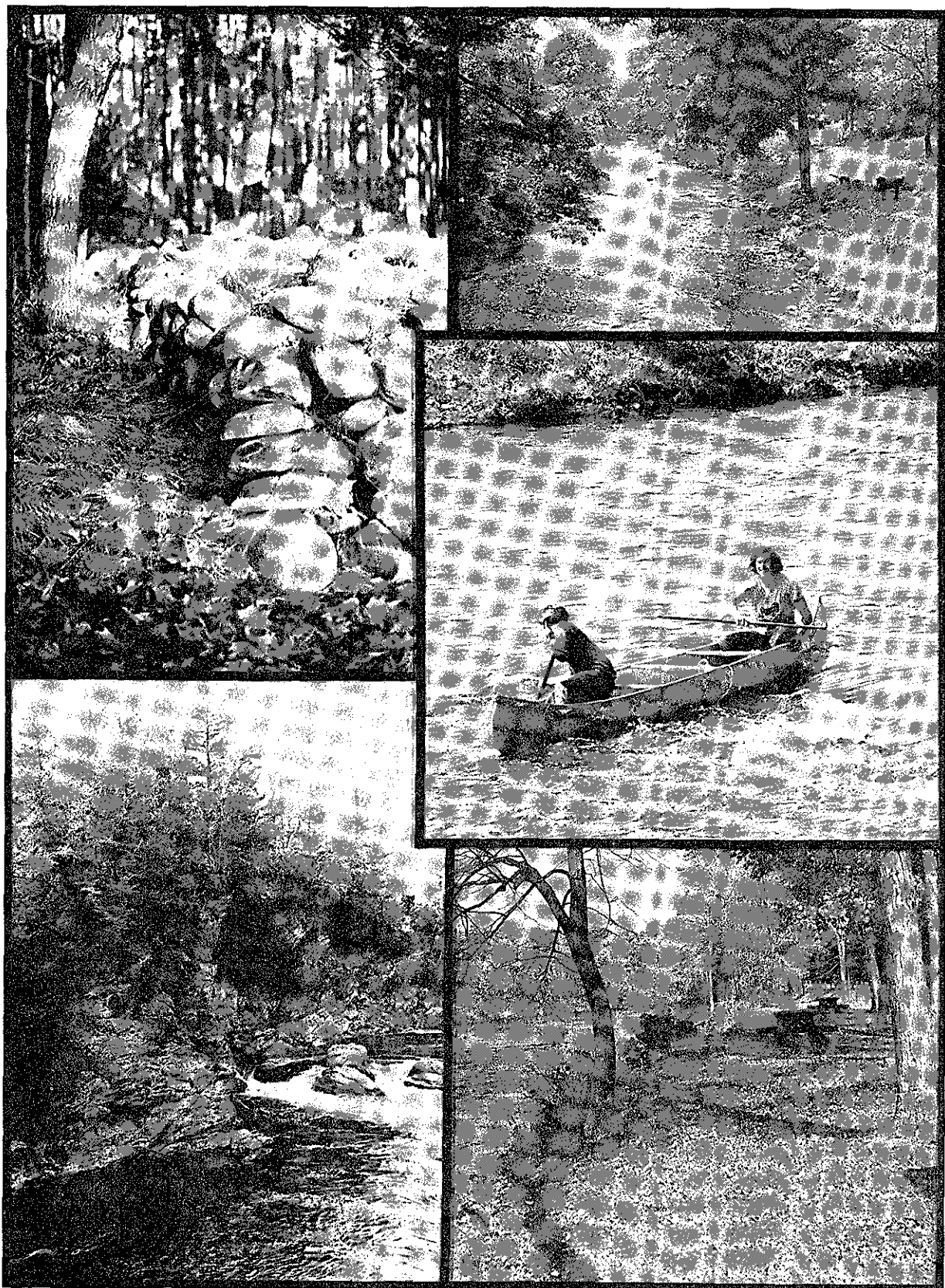
INTERIOR DEPARTMENT'S ROLE

If the governor should apply to the Secretary of the Interior to have the Shepaug included in the Wild and Scenic Rivers System, pursuant to Section 2(a)(ii) of the Wild and Scenic Rivers Act, the role of the Secretary would be to determine the extent to which the comprehensive plan for the river is in accord with the conceptual plan of this report. If technical assistance by the Interior Department has been provided in the preparation of the comprehensive plan, then significant discrepancies will be unlikely. With an acceptable plan in effect, and being implemented, the Secretary may add the river to the National System.

When the river is granted Scenic River status, the Secretary's role would be to monitor activities proposed in the area to ensure that no department or agency of the United States assists by loan, grant, license or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which the river was designated. This review would extend to any dam, water conduit, reservoir, powerhouse, transmission line, or other project works for which a Federal Power Commission license might be necessary.

Environmental impact statements on all other federal activities would be reviewed to be certain that direct and indirect impacts on the river environment are addressed, and appropriate mitigating measures are included.

The Secretary's role would also include monitoring the performance of the Scenic River management agency to ensure that the approved management plan and the objectives of the Wild and Scenic Rivers Act are being adhered to.



APPENDIX A

PRINCIPALS AND STANDARDS ANALYSIS

INTRODUCTION

Principles and Standards is a procedure developed by the Water Resources Council in 1973 to guide Federal water resources planning activities. It is included in this Wild and Scenic River Study to meet the requirements of the Water Resources Council and is not intended to constitute a recommended plan for the river. The goal of this procedure is to improve the planning criteria used to achieve wise use to the Nation's water and related land resources by placing environmental concerns on a basis equal to economic development. This allows decision makers to identify and evaluate tradeoffs between the objective of national economic development and environmental quality.

The Principles and Standards procedure used here involves 1) the development of alternative plans, 2) the evaluation and comparison of these alternatives, and 3) the comparison of each alternative with the recommended plan. The alternative plans for the area must be developed to represent future development plans which range from maximum environmental protection to maximum economic development, and include a plan for the implementation of the Wild and Scenic Rivers program and a plan for the continuation of existing trends in the area.

The evaluation of these alternative plans are made in terms of the two objectives, Environmental Quality and National Economic Development, and the following four accounts:

1. Environmental Quality
2. National Economic Development
3. Regional Development
4. Social Well-Being

and is presented in chart form in the text. Next, the comparison of each alternative plan with the existing trends plan is developed to indicate the net effect of each alternative plan in terms of the four evaluation accounts. This information is used to select the recommended plan based on its acceptability, effectiveness, efficiency and completeness. Finally, a comparison in chart form is made of each alternative plan with the recommended plan to illustrate the advantages and disadvantages which should occur if the recommended plan is implemented.

THE ALTERNATIVE PLANS

Four alternative plans have been developed for the Shepaug Valley ranging from maximum environmental protection to maximum economic development. In all cases, these plans are merely estimates of possible future development paths and have been presented here for comparison purposes only.

The EXISTING TRENDS PLAN assumes that growth and development in the five river valley towns will occur as called for in existing state and regional plans through enforcement of existing local and state regulations. Specifically, this means that the Shepaug Valley will retain its planning designation as "PERMANENT OPEN SPACE" and "RECREATION STREAM" with potential use as public water supply. Population growth will continue at approximately 1.5% annual average increase. Regulations establishing low density (2-3 acre) zoning with three commercial districts along the river will continue to be enforced. Modest mining and timbering activities within the corridor will continue. There will be increased pressure to convert agricultural lands to residential uses. Use by non-residents of existing recreation areas operated by towns and local land trusts will continue.

The ECONOMIC DEVELOPMENT PLAN assumes that growth and development in the five river valley towns will be accelerated by major urban developments in the adjacent Danbury-New Milford area. These developments include the New Milford sewage treatment plant and U.S. Route 7 extension which will spark business and residential activities in the area and cause suburban pressures on the towns. Specifically, this assumption implies that suburban and second home development pressures will bring about some medium density zoning (3/4 - 1 acre) in the valley. Retail business activity in commercial districts will increase public water supply needs in the region, which will be met through a diversion located below Roxbury Falls. Mining and timbering activities will increase to meet accelerated building demands in the region. Population growth will occur at approximately 2.0% annual average increase. Conversion of agricultural lands would lead to new residential projects and mining sites in the river valley. All existing recreational areas will be burdened by excessive use.

The WILD AND SCENIC RIVER PLAN assumes designation of 26 miles of the Shepaug River and the implementation of management techniques which conserve the existing natural, visual, archeological and historic assets of the valley. Although the detailed management plan will be developed by the managing agency, a general concept plan is presented here for comparison purposes. Specifically, this plan might involve the development of zoning regulations to protect the visual corridor from inappropriate development and to protect the flood plains for both their ecological and archeological values. Provisions might be made by which an archeological survey is required before any development occurs on potential archeological sites. Critical natural areas, such as very steep slopes, bedrock outcrops, virgin timber stands, islands, waterfalls, natural springs and wildlife areas, could be identified and protected through regulations, easements or acquisition, as appropriate. A continuous trail system could be developed through the purchase of public use easements along the abandoned railroad beds. Three additional public river and trail access sites could be acquired for use by fishermen, backpackers and canoeists at the Shepaug's wild and scenic river segment boundaries. A public roadside rest stop could be developed in conjunction with the town of

Washington's proposed scenic highway along the northern stretch of the Shepaug above its confluence with the Bantam. A public vista point could also be developed along Falls Road overlooking Roxbury Falls.

Growth and development in the Shepaug Valley is assumed to continue as indicated in existing trends. The increasing recreational activity in the valley could be controlled through management techniques which maintain recreation use at an acceptable level to the river, its valley and its people.

The ENVIRONMENTAL PROTECTION PLAN assumes that the Shepaug River will be used for public water supply and that its watershed will be protected from pollution sources by existing laws. A watershed association in the valley would give support to wild and scenic river designation of the qualifying 26 mile segment and would encourage the implementation of management techniques which provide maximum protection for the river's natural, scenic and cultural values. Specifically, this management plan would call for the fee title acquisition on a life-lease basis of all privately owned lands in the visual corridor and for their eventual return to undeveloped conditions. All farm land acquired under this plan would be leased back to farmers since the maintenance of cropland and other forms of open space is needed for wildlife diversity. A visitor center, managing all recreational and educational opportunities in the valley, would be developed. Also, a continuous trail system would be developed through the river corridor to provide controlled recreational and educational access to the river. The Mine Hill property would be made available for public use, and two roadside parks and three river access points would be developed, as proposed in the wild and scenic river plan.

EVALUATION

The Principles and Standards table (page 81) has been prepared to quantify the effects of each alternative plan on the four accounts: environmental quality, economic development, regional development and social well-being. The value of each alternative plan in meeting each of these accounts is discussed below.

ENVIRONMENTAL QUALITY OBJECTIVE

In the Principles and Standards table, the environmental quality objective is evaluated in terms of the amount and type of protection provided for the waterway, the visual corridor and the natural processes of the Shepaug Valley. An indication is given of the acres that would be protected by each plan through local zoning, streambelts ordinances, land trusts, State Inland Wetlands Act, and State land ownership. Also, an estimate is made of the potential amount of land acquisition under each plan.

The effectiveness of these land use controls and the projected growth and development for the area are used to indicate the degree of protective or adverse effects which each alternative plan would have on the natural processes of the river valley.

The EXISTING TRENDS PLAN protects less than 25% of the land area of the visual corridor through land use controls. This fact plus the slow growth projected for the currently moderate activities of sand and gravel extraction, timber harvesting and residential development account for the moderately adverse effects of this plan on geology, soils, vegetation, fish and wildlife and rare and endangered species. Another important factor in the determination of these moderately adverse effects is the possibility of a water supply reservoir or a hydro-electric power generator on the Shepaug River. Both of these developments are unlikely under current State plans, but do represent a possible future threat to the natural processes of the valley.

The water, air and scenery of the Shepaug Valley, however, receive a modest degree of protection, from the indication of the Shepaug as a "New Water Supply Watershed" and a "Major Recreation Stream" under current state plans. This plan should discourage any major development proposal which would adversely effect the water quality, air quality or scenic quality of the valley.

The ECONOMIC DEVELOPMENT PLAN provides the same land use controls to the Shepaug corridor as the Existing Trends Plan, but has more adverse effects on the natural processes of the valley. These adverse effects are due to the projection of increased activities by sand and gravel operations, timber harvesting and residential development. The most significant of these effects would be the reduction of water quality, air quality, scenic quality, and fish and wildlife habitat.

The WILD AND SCENIC RIVER plan provides additional land use controls to the Shepaug corridor over the Existing Trends Plan. These protections include the acquisition in-fee or easement of critical natural areas and recreational sites, the enactment of streambelt ordinances which protect the flood plain and associated critical habitats, and the adjustment of zoning ordinances to provide guidelines for development in the scenic corridor. This legal protection plus the prevention of federally funded water resource projects, such as hydro-electric power dams and water supply reservoirs, provides a high degree of protection to the natural processes of the Shepaug Valley.

The ENVIRONMENTAL PROTECTION PLAN calls for the same land use controls as the wild and scenic river plan, plus acquisition in-fee of all non-trust lands in the scenic corridor to form a 12,500 acre scenic preserve. This plan would provide the utmost control to the managing agency over all activities in the corridor, including the prevention of mining, timbering and residential development; and the maintenance of the forestry and agricultural resources. Furthermore, this plan provides the highest degree of protection to all the natural processes in the Shepaug Valley.

ECONOMIC DEVELOPMENT OBJECTIVE

In the Principles and Standards chart, the economic development objective is evaluated in terms of the direct costs of implementation and the indirect costs to the community of each plan due to economic resources displaced by land acquisition and development. The direct costs include the acquisition of land and easements, the development of recreational facilities and the annual operations and maintenance budget. The economic resources foregone in this area are mineral resources, forestry and agricultural lands.

The EXISTING TRENDS PLAN does not include any significant acquisition or development proposals in the corridor. Mineral, forestry and agricultural resources however, are being displaced by on-going growth and development in the Shepaug Valley. The mineral resources in the corridor of sand and gravel totals approximately 31,500 acre-ft. According to the Bureau of Mines, "In terms of actual production and use, the supply of sand and gravel and stone in the area is virtually unlimited for the foreseeable future. However, ... due to current rate of both direct and indirect aggregate elimination by residential, industrial, and public works development, sources of naturally occurring granular aggregate in the District may no longer be available in about 20 years" (i.e., 1986). The commercial forestry resource has been estimated at 7,125 acres by extrapolating from state-wide figures developed in a 1971 inventory, and reported in USDA Forest Service Resource Bulletin NE-44 (1976). Depletion and development is estimated at .5% per year. Agricultural resources are estimated at 18% of the valley by the U.S. Census of Agriculture and are being converted to other uses at the rate of 3.4% annually.

The ECONOMIC DEVELOPMENT PLAN does not include any significant acquisition or development proposals in the study corridor although a water supply diversion project is assumed to take place below Roxbury Falls. The rate of foregone forestry and agricultural resources is slightly higher under this plan than under the existing trends plan, due to the assumed acceleration of growth and development in the study area. Mineral resources however, are not foregone at a higher rate than in the existing trends plan, since development would occur at a higher density.

The WILD AND SCENIC RIVER plan would entail a \$1 million expenditure for acquisition and development. This estimate is based on the purchase of scenic easements for 1,700 acres of land with special environmental values, and fee title to 18 acres for recreation sites and 20 acres of otherwise significant land threatened by development. It is important to note that these figures represent liberal estimates for Principles and Standards analysis. It is possible that, when the more detailed local planning effort is carried out, more conservative acreage figures will prove adequate for meeting Wild and Scenic River objectives.

The average per acre value for land in this area is \$1,800, with \$25,000 per acre value for prime developable waterfront land. Development costs are based on estimates by Connecticut Department of Environmental Protection for 2 picnic areas and 3 river access sites. Operations and maintenance are estimated at \$23,000/year, which includes upkeep for the recreational facilities and a coordinator's salary.

This plan will have significant effects on foregone economic opportunities through the prevention of federally funded water resource projects. Hydro-electric power generation at the capacity of 13,500 kW will be foregone. However, this will not significantly effect the power resources of the New England region, according to Federal Power Commission. A water reservoir at the capacity of 143 billion gallons would also be foregone; however the use of a diversion could provide the needed water supply without flooding the Shepaug Valley.

Economic resources under this plan will be foregone at a greater rate than under existing trends plan due to the proposed acquisition of land and easements. Estimates indicate that mineral resources will be foregone at 1% annually; forestry resources at .9% annually; and agricultural resources at 3.7% annually.

The ENVIRONMENTAL PROTECTION plan calls for acquisition and development costs of \$19 million. This includes the acquisition of 10,850 acres in the visual corridor and the development of a visitor center/caretaker's residence, and recreational facilities. Maintenance and operation cost at \$36,000/year includes the maintenance of the woodland by a forester, two staff salaries, and upkeep for recreational facilities. These costs are based on estimates from Connecticut's Department of Environmental Protection.

Economic resources under this plan are foregone at a high rate due to the extensive acquisition of land. Mineral resources would be foregone at 3.3% annually and forestry resources at 5% annually. Agricultural resources however would not be depleted since lease-back arrangements would be made with farmers to maintain their operation and no new development would be allowed.

REGIONAL DEVELOPMENT ACCOUNT

The regional development account in the Principles and Standards chart is evaluated in terms of growth in the 5 town study area and real property taxes foregone. Growth indicators include population, housing, retail sales and employment. Real property taxes foregone for each town are based on the estimated value of acquired lands and easements under each plan.

The EXISTING TREND plan assumes population growth in the 5 towns will occur at 1.5% annually to the year 2000 as projected by Connecticut Department of Planning and Energy. The growth in housing starts, retail sales and employment are all based on this annual population increase and are reflective of normal growth. Real property taxes will not be effected by this plan since no major land acquisition is proposed.

The ECONOMIC DEVELOPMENT plan assumes a 2.0% annual population growth resulting from major urban developments in the Danbury-New Milford area. Housing starts and retail sales are greater than under the existing trends plan, due to the accelerated population growth. Employment reflects not only the increased population of the area, but also the greater employment rate of the Danbury Labor Market. Some of this increase in employment could be attributed to increased sand and gravel mining, timber harvesting and construction in the Shepaug corridor. No major public acquisitions of land or easements are foreseen by this plan which would deplete the real property tax base.

The WILD AND SCENIC RIVER plan has no significant effect on regional growth since population, housing, retail sales and employment growth are the same as existing trends.

Real property taxes will be affected by this plan due to the public acquisition of land and easements which removes these properties from the tax base.

The value of real property taxes foregone is estimated by calculating the taxes due to each town on properties acquired under this plan. This estimated value of foregone taxes is not significant when compared to the Grand Levy of each town. The greatest effect, however, will be felt by Roxbury since foregone taxes would represent 2.4% of its Grand Levy, whereas the other towns' foregone taxes are less than 1% of their Grand Levy.

The ENVIRONMENTAL PROTECTION plan has very little additional effect on the regional growth indicators over existing trends. It is assumed that the prevention of growth and development in the Shepaug corridor will merely displace new individuals to other locales in the 5 town area. Two additional employees will be required by this plan to manage the visitor center and 12,500 acre river corridor.

Real property taxes, however, will be greatly effected by this plan due to the public acquisition in fee of 10,850 acres. An estimate of the value of real property taxes foregone has been made by calculating the taxes due to each town on the sale value of the properties acquired under this plan and comparing these taxes to the Grand Levy. Roxbury, Washington and Morris would bear the greatest reduction in Grand Levies at 40%, 13% and 13%, respectively. Adjacent property values might accelerate due to the permanent open space amenity and the additional taxes on these properties may offset some of the foregone taxes under this plan, but no method to calculate these additional taxes has been determined.

SOCIAL WELL-BEING ACCOUNT

The social well-being objective in the Principles and Standards chart is evaluated in terms of recreational opportunities and cultural resources available to the people of and visitors to the Shepaug valley. Recreational opportunities are indicated by the amount and type of facilities available and the level of participation in various activities. The level of participation is indicated in relation to the estimated limit of recreational activity acceptable to the river, its valley and its people. Cultural resources are evaluated in terms of the degree of protection provided to the educational, historical and archeological resources of the area.

The EXISTING TREND plan will not expand the number of recreational facilities along the Shepaug. The activity level, however, is expected to increase as the population in the study area and the region expands. Generally, this means that water related activities will reach the resource capacity level (i.e., moderate) and current over use problems in land related activities will be further aggravated.

Protection for cultural resources will remain minimal and the possibility of development in the corridor will pose a constant threat to valuable historical, educational and archeological sites. The most serious effect is the threat to the outstanding archeological resources of the valley by land development and scavenging by non-professional archeologists.

The ECONOMIC DEVELOPMENT plan includes no additional recreational facilities, even though the accelerated population growth will cause considerable over use of the river and its valley.

Cultural resources will continue to be threatened by development in the corridor and by the additional mining and timbering activities.

The WILD AND SCENIC RIVER plan proposes a modest expansion of the recreational facilities of the Shepaug Valley including three river access sites, two roadside parks and nine additional miles of trails. The demand for recreational activities is expected to be the same as those projected for existing trends. Proper design, location, and management of these facilities, however, would help to regulate recreational activities at acceptable levels for the resource, and to alleviate current over use problems.

Cultural resources would receive a high degree of protection under this plan due to the acquisition of critical areas, the implementation of land use controls, and the development of special management policies. Archeological sites would receive the most protection due to their outstanding value and location in the flood plain where much of the protection will be focused. Historical sites would be protected by scenic easements and protective zoning. Educational opportunities would be enhanced primarily through trail development, and archeological research.

The ENVIRONMENTAL PROTECTION plan proposes the same additional recreation facilities as the wild and scenic rivers plan, plus the development of a visitors center. The demand for recreational activities and the management of recreation at acceptable activity levels would also be similar to the wild and scenic river plan.

Cultural resources, however, would receive additional protection since all of the historic, archeologic and educational sites would be publicly owned and managed for their protection. The visitor center could provide a special opportunity for the public to receive information about the environment of the Shepaug River, its archeological significance and historical heritage.

OBJECTIVES	PLANS	EXISTING TRENDS	ECONOMIC DEVELOPMENT	WILD & SCENIC RIVER	ENVIRONMENTAL PROTECTION
<u>ENVIRONMENTAL QUALITY</u>					
<u>WATERWAY PROTECTION</u>					
1 Wild & Scenic River Miles		0	0	26 mi	26 mi
2 Streambelt		0	0	26 mi	26 mi
<u>VISUAL CORRIDOR PROTECTION</u>					
3 Wild & Scenic River Corridor		0	0	12500 ac	12500 ac
4 Town Ordinance		0	0	3000 ac	3000 ac
5 Inland Wetlands	1400 ac	1400 ac	1400 ac	1400 ac	1400 ac
6 Land Trust	1300 ac	1300 ac	1300 ac	1300 ac	1300 ac
7 State Ownership	350 ac	350 ac	350 ac	350 ac	350 ac
8 Commercial Zoning	170 ac	170 ac	170 ac	170 ac	0
9 Low Density Zoning	12300 ac	9500 ac	12300 ac	12300 ac	12500 ac
10 Medium Density Zoning	0	2800 ac	0	0	0
11 Estimated Scenic Easement	0	0	1700 ac	1700 ac	0
12 Estimated Public Use Easement	0	0	11 ac	11 ac	0
13 Estimated Fee Acquisition	0	0	27 ac	27 ac	10850 ac
<u>NATURAL PROCESS PROTECTION *</u>					
14 Geologic Processes	ma	ma	mp	hp	
15 Soil Stability	ma	ma	mp	hp	
16 Water Quality	mp	ha	hp	hp	
17 Vegetation Diversity	ma	ma	mp	hp	
18 Fish & Wildlife Habitat	ma	ha	mp	hp	
19 Rare & Endangered Species	ma	ma	mp	hp	
20 Air Quality	ne	ma	mp	hp	
21 Scenic Quality	ne	ma	mp	hp	
<u>ECONOMIC DEVELOPMENT</u>					
<u>DIRECT COSTS</u>					
22 Acquisition Costs (1975 \$)	0	0	\$986000	\$19.5 million	
23 Development Costs	0	0	\$ 15000	\$ 113000	
24 Operations & Maint. Costs	0	0	\$ 23000/yr	\$ 23000/yr	
<u>FOREGONE OPPORTUNITIES</u>					
25 Mineral Resources	195 ac-ft/yr	102 ac-ft/yr	360 ac-ft/yr	1050 ac-ft/yr	
26 Forestry Resources	35 ac/yr	40 ac/yr	70 ac/yr	362 ac/yr	
27 Agricultural Resources	75 ac/yr	80 ac/yr	85 ac/yr	0 ac/yr	
28 Hydro-electric Power Capacity	0	0	637500 kw	637500 kw	
29 Water Supply - Reservoir	0	0	143 bill.gal.	143 bill.gal.	
30 Water Supply - Diversion	0	0	0	0	
<u>REGIONAL DEVELOPMENT</u>					
<u>ANNUAL GROWTH INDICATORS</u>					
31 Population Growth Rate	1.5%	2.0%	1.5%	1.5%	
32 Housing Starts	80	105	80	80	
33 Retail Sale Growth (1974 \$)	\$240000	\$321000	\$240000	\$240000	
34 Employment (Jobs)	55	135	55	55	
<u>REAL PROPERTY TAX FOREGONE</u> \$ amt *% Grand (thous)* Levy					
35 Washington	0	0	\$ 7 : 0%	\$162 : 13%	
36 Roxbury	0	0	\$14 : 2%	\$241 : 40%	
37 Litchfield	0	0	\$ 1 : 0%	\$ 25 : 1%	
38 Morris	0	0	\$ 2 : 0%	\$ 82 : 13%	
39 Warren	0	0	\$ 2 : 0%	\$ 12 : 4%	
<u>SOCIAL WELL-BEING</u>					
<u>RECREATION FACILITIES</u>					
40 Visitor Center	0	0	0	1	
41 River Access Sites	6	6	9	9	
42 Roadside Parks	3	3	5	5	
43 Trails (miles)	8	8	17	17	
44 Swimming Sites	2	2	2	2	
45 Canoe Livery	1	1	1	1	
46 Riding Facilities	1	1	1	1	
47 Campgrounds	1	1	1	1	
<u>RECREATION ACTIVITY</u>					
48 Canoeing	Moderate	High	Moderate	Moderate	
49 Fishing	Moderate	High	Moderate	Moderate	
50 Hiking	Moderate	High	Moderate	Moderate	
51 Swimming	Moderate	High	Moderate	Moderate	
52 Pleasure Driving	High	High	Moderate	Moderate	
53 Picnicking	High	High	Moderate	Moderate	
<u>CULTURAL RESOURCES *</u>					
55 Educational Opportunities	ne	ne	mp	hp	
56 Historic Sites	ma	ma	mp	hp	
57 Archeologic Sites	ma	ma	hp	hp	

NOTE

- * hp - highly protective
 mp - moderately protective
 ne - no effect
 ma - moderately adverse
 ha - highly adverse

EXISTING TRENDS COMPARISON TABLE: 2

OBJECTIVES	PLANS	ECONOMIC DEVELOPMENT	EXISTING TRENDS	NET EFFECTS
<u>ENVIRONMENTAL QUALITY</u>				
<u>WATERWAY PROTECTION</u>				
1 Wild & Scenic River Miles		0	0	0
2 Streambelt		0	0	0
<u>VISUAL CORRIDOR PROTECTION</u>				
3 Wild & Scenic River Corridor		0	0	0
4 Town Ordinance		0	0	0
5 Inland Wetlands	1400 ac	1400 ac	1400 ac	0
6 Land Trust	1300 ac	1300 ac	1300 ac	0
7 State Ownership	350 ac	350 ac	350 ac	0
8 Commercial Zoning	170 ac	170 ac	170 ac	0
9 Low Density Zoning	9500 ac	12300 ac	12300 ac	-2800 ac
10 Medium Density Zoning	2800 ac	0	0	2800 ac
11 Estimated Scenic Easement	0	0	0	0
12 Estimated Public Use Easement	0	0	0	0
13 Estimated Fee Acquisition	0	0	0	0
<u>NATURAL PROCESS PROTECTION *</u>				
14 Geologic Processes	ma	ma	ma	0
15 Soil Stability	ma	ma	ma	0
16 Water Quality	ma	ma	ma	Unfavorable
17 Vegetation Diversity	ma	ma	ma	0
18 Fish & Wildlife Habitat	ma	ma	ma	Unfavorable
19 Rare & Endangered Species	ma	ma	ma	0
20 Air Quality	ma	ma	ma	Unfavorable
21 Scenic Quality	ma	ma	ma	Unfavorable
<u>ECONOMIC DEVELOPMENT</u>				
<u>DIRECT COSTS</u>				
22 Acquisition Costs (1975 \$)		0	0	0
23 Development Costs		0	0	0
24 Operations & Maint. Costs		0	0	0
<u>FOREGONE OPPORTUNITIES</u>				
25 Mineral Resources	102 ac-ft/yr	195 ac-ft/yr	-93 ac-ft/yr	
26 Forestry Resources	40 ac/yr	35 ac/yr	5 ac/yr	
27 Agricultural Resources	80 ac/yr	75 ac/yr	5 ac/yr	
28 Hydro-electric Power Capacity	0	0	0	
29 Water Supply - Reservoir	0	0	0	
30 Water Supply - Diversion	0	0	0	
<u>REGIONAL DEVELOPMENT</u>				
<u>ANNUAL GROWTH INDICATORS</u>				
31 Population Growth Rate	2.0%	1.5%	.5%	
32 Housing Starts	105	80	25	
33 Retail Sale Growth (1974 \$)	\$321000	\$240000	\$81000	
34 Employment (Jobs)	135	55	80	
<u>REAL PROPERTY TAX FOREGONE</u>				
\$ amt % Grand (thous)* Levy				
35 Washington	0	0	0	
36 Roxbury	0	0	0	
37 Litchfield	0	0	0	
38 Morris	0	0	0	
39 Warren	0	0	0	
<u>SOCIAL WELL-BEING</u>				
<u>RECREATION FACILITIES</u>				
40 Visitor Center	0	0	0	
41 River Access Sites	6	6	0	
42 Roadside Parks	3	3	0	
43 Trails (miles)	3	8	0	
44 Swimming Sites	2	2	0	
45 Canoe Livery	1	1	0	
46 Riding Facilities	1	1	0	
47 Campgrounds	1	1	0	
<u>RECREATION ACTIVITY</u>				
48 Canoeing	High	Moderate	Unfavorable	
49 Fishing	High	Moderate	Unfavorable	
50 Hiking	High	Moderate	Unfavorable	
51 Swimming	High	Moderate	Unfavorable	
52 Pleasure Driving	High	High	0	
53 Picnicking	High	High	0	
<u>CULTURAL RESOURCES *</u>				
55 Educational Opportunities	ne	ne	0	
56 Historic Sites	ma	ma	0	
57 Archeologic Sites	ma	ma	0	

EXISTING TRENDS COMPARISON TABLE: 3

OBJECTIVES	PLANS	WILD & SCENIC RIVER	EXISTING TRENDS	NET EFFECTS
<u>ENVIRONMENTAL QUALITY</u>				
<u>WATERWAY PROTECTION</u>				
1 Wild & Scenic River Miles		26 mi	0	26 mi
2 Streambelt		26 mi	0	26 mi
<u>VISUAL CORRIDOR PROTECTION</u>				
3 Wild & Scenic River Corridor		12500 ac	0	12500 ac
4 Town Ordinance		3000 ac	0	3000 ac
5 Inland Wetlands		1400 ac	1400 ac	0
6 Land Trust		1300 ac	1300 ac	0
7 State Ownership		350 ac	350 ac	0
8 Commercial Zoning		170 ac	170 ac	0
9 Low Density Zoning		12300 ac	12300 ac	0
10 Medium Density Zoning		0	0	0
11 Estimated Scenic Easement		1700 ac	0	1700 ac
12 Estimated Public Use Easement		11 ac	0	11 ac
13 Estimated Fee Acquisition		27 ac	0	27 ac
<u>NATURAL PROCESS PROTECTION *</u>				
14 Geologic Processes		mp	ma	Favorable
15 Soil Stability		mp	ma	Favorable
16 Water Quality		hp	mp	Favorable
17 Vegetation Diversity		mp	ma	Favorable
18 Fish & Wildlife Habitat		mp	ma	Favorable
19 Rare & Endangered Species		mp	ma	Favorable
20 Air Quality		mp	ne	Favorable
21 Scenic Quality		mp	ne	Favorable
<u>ECONOMIC DEVELOPMENT</u>				
<u>DIRECT COSTS</u>				
22 Acquisition Costs (1975 \$)		\$986000	0	\$986000
23 Development Costs		\$ 15000	0	\$ 15000
24 Operations & Maint. Costs		\$ 23000/yr	0	\$ 23000/yr
<u>FOREGONE OPPORTUNITIES</u>				
25 Mineral Resources		360 ac-ft/yr	195 ac-ft/yr	165 ac-ft/yr
26 Forestry Resources		70 ac/yr	35 ac/yr	35 ac/yr
27 Agricultural Resources		85 ac/yr	75 ac/yr	10 ac/yr
28 Hydro-electric Power Capacity		627500 kw	0	627500 kw
29 Water Supply - Reservoir		143 bill.gal	0	143 bill.gal
30 Water Supply - Diversion		0	0	0
<u>REGIONAL DEVELOPMENT</u>				
<u>ANNUAL GROWTH INDICATORS</u>				
31 Population Growth Rate		1.5%	1.5%	0
32 Housing Starts		80	80	0
33 Retail Sale Growth (1974 \$)		\$240000	\$240000	0
34 Employment (Jobs)		55	55	0
<u>REAL PROPERTY TAX FOREGONE</u>				
\$ amt % Grand (thous)* Levy				
35 Washington		\$ 7 : 0%	0	\$ 7 : 0%
36 Roxbury		\$14 : 2%	0	\$14 : 2%
37 Litchfield		\$ 1 : 0%	0	\$ 1 : 0%
38 Morris		\$ 2 : 0%	0	\$ 2 : 0%
39 Warren		\$ 2 : 1%	0	\$ 2 : 1%
<u>SOCIAL WELL-BEING</u>				
<u>RECREATION FACILITIES</u>				
40 Visitor Center		3	0	0
41 River Access Sites		9	6	3
42 Roadside Parks		5	3	2
43 Trails (miles)		7	8	9
44 Swimming Sites		2	2	0
45 Canoe Livery		1	1	0
46 Riding Facilities		1	1	0
47 Campgrounds		1	1	0
<u>RECREATION ACTIVITY</u>				
48 Canoeing		Moderate	Moderate	0
49 Fishing		Moderate	Moderate	0
50 Hiking		Moderate	Moderate	0
51 Swimming		Moderate	Moderate	0
52 Pleasure Driving		Moderate	High	Favorable
53 Picnicking		Moderate	High	Favorable
<u>CULTURAL RESOURCES *</u>				
55 Educational Opportunities		mp	ne	Favorable
56 Historic Sites		mp	ma	Favorable
57 Archeologic Sites		hp	ma	Favorable

NOTE

- * hp - highly protective
- mp - moderately protective
- ne - no effect
- ma - moderately adverse
- ha - highly adverse

EXISTING TRENDS COMPARISON TABLE: 4

WILD & SCENIC RIVER COMPARISON TABLE: 5

OBJECTIVES	PLANS	ENVIRONMENTAL PROTECTION	EXISTING TRENDS	NET EFFECTS
ENVIRONMENTAL QUALITY				
WATERWAY PROTECTION				
1 Wild & Scenic River Miles	26 mi	0	26 mi	
2 Streambelt	26 mi	0	26 mi	
VISUAL CORRIDOR PROTECTION				
3 Wild & Scenic River Corridor	12500 ac	0	12500 ac	
4 Town Ordinance	3000 ac	0	3000 ac	
5 Inland Wetlands	1400 ac	1400 ac	0	
6 Land Trust	1300 ac	1300 ac	0	
7 State Ownership	350 ac	350 ac	0	
8 Commercial Zoning	0	170 ac	170 ac	
9 Low Density Zoning	12500 ac	12300 ac	200 ac	
10 Medium Density Zoning	0	0	0	
11 Estimated Scenic Easement	0	0	0	
12 Estimated Public Use Easement	0	0	0	
13 Estimated Fee Acquisition	10850 ac	0	10850 ac	
NATURAL PROCESS PROTECTION *				
14 Geologic Processes	hp	ma	Favorable	
15 Soil Stability	hp	ma	Favorable	
16 Water Quality	hp	mp	Favorable	
17 Vegetation Diversity	hp	ma	Favorable	
18 Fish & Wildlife Habitat	hp	ma	Favorable	
19 Rare & Endangered Species	hp	ma	Favorable	
20 Air Quality	hp	ne	Favorable	
21 Scenic Quality	hp	ne	Favorable	
ECONOMIC DEVELOPMENT				
DIRECT COSTS				
22 Acquisition Costs (1975 \$)	\$19.5 mil.	0	\$19.5 mil.	
23 Development Costs	\$113000	0	\$113000	
24 Operations & Maint. Costs	\$36000/yr	0	\$36000/yr	
FOREGONE OPPORTUNITIES				
25 Mineral Resources	1050 ac-ft/yr	195 ac-ft/yr	855 ac-ft/yr	
26 Forestry Resources	362 ac/yr	35 ac/yr	327 ac/yr	
27 Agricultural Resources	0	75 ac/yr	-75 ac/yr	
28 Hydro-electric Power Capacity	627500 kw	0	627500 kw	
29 Water Supply - Reservoir	143 bill.gal.	0	143 kw	
30 Water Supply - Diversion	0	0	0	
REGIONAL DEVELOPMENT				
ANNUAL GROWTH INDICATORS				
31 Population Growth Rate	1.5%	1.5%	0	
32 Housing Starts	80	80	0	
33 Retail Sale Growth (1974 \$)	\$240000	\$240000	0	
34 Employment (Jobs)	55	55	0	
REAL PROPERTY TAX FOREGONE				
\$ amt. % Grand (thous)* Levy				
35 Washington	\$162 : 13%	0	\$162 : 13%	
36 Roxbury	\$241 : 40%	0	\$241 : 40%	
37 Litchfield	\$25 : 1%	0	\$25 : 1%	
38 Morris	\$82 : 13%	0	\$82 : 13%	
39 Warren	\$12 : 4%	0	\$12 : 4%	
SOCIAL WELL-BEING				
RECREATION FACILITIES				
40 Visitor Center	1	0	1	
41 River Access Sites	9	6	3	
42 Roadside Parks	5	3	2	
43 Trails (miles)	17	8	9	
44 Swimming Sites	2	2	0	
45 Canoe Livery	1	1	0	
46 Riding Facilities	1	1	0	
47 Campgrounds	1	1	0	
RECREATION ACTIVITY				
48 Canoeing	Moderate	Moderate	0	
49 Fishing	Moderate	Moderate	0	
50 Hiking	Moderate	Moderate	0	
51 Swimming	Moderate	Moderate	0	
52 Pleasure Driving	Moderate	High	Favorable	
53 Picnicking	Moderate	High	Favorable	
CULTURAL RESOURCES *				
55 Educational Opportunities	hp	ne	Favorable	
56 Historic Sites	hp	ma	Favorable	
57 Archeologic Sites	hp	ma	Favorable	

OBJECTIVES	PLANS	WILD & SCENIC RIVER	EXISTING TRENDS	NET EFFECTS
ENVIRONMENTAL QUALITY				
WATERWAY PROTECTION				
1 Wild & Scenic River Miles	26 mi	0	26 mi	
2 Streambelt	26 mi	0	26 mi	
VISUAL CORRIDOR PROTECTION				
3 Wild & Scenic River Corridor	12500 ac	0	12500 ac	
4 Town Ordinance	3000 ac	0	3000 ac	
5 Inland Wetlands	1400 ac	1400 ac	0	
6 Land Trust	1300 ac	1300 ac	0	
7 State Ownership	350 ac	350 ac	0	
8 Commercial Zoning	170 ac	170 ac	0	
9 Low Density Zoning	12300 ac	12300 ac	0	
10 Medium Density Zoning	0	0	0	
11 Estimated Scenic Easement	1700 ac	0	1700 ac	
12 Estimated Public Use Easement	11 ac	0	11 ac	
13 Estimated Fee Acquisition	27 ac	0	27 ac	
NATURAL PROCESS PROTECTION *				
14 Geologic Processes	mp	ma	Favorable	
15 Soil Stability	mp	ma	Favorable	
16 Water Quality	hp	mp	Favorable	
17 Vegetation Diversity	mp	ma	Favorable	
18 Fish & Wildlife Habitat	mp	ma	Favorable	
19 Rare & Endangered Species	mp	ma	Favorable	
20 Air Quality	mp	ne	Favorable	
21 Scenic Quality	mp	ne	Favorable	
ECONOMIC DEVELOPMENT				
DIRECT COSTS				
22 Acquisition Costs (1975 \$)	\$986000	0	\$986000	
23 Development Costs	\$15000	0	\$15000	
24 Operations & Maint. Costs	\$23000/yr	0	\$23000/yr	
FOREGONE OPPORTUNITIES				
25 Mineral Resources	360 ac-ft/yr	195 ac-ft/yr	165 ac-ft/yr	
26 Forestry Resources	70 ac/yr	35 ac/yr	35 ac/yr	
27 Agricultural Resources	85 ac/yr	75 ac/yr	10 ac/yr	
28 Hydro-electric Power Capacity	627500 kw	0	627500 kw	
29 Water Supply - Reservoir	143 bill.gal	0	143 bill.gal	
30 Water Supply - Diversion	0	0	0	
REGIONAL DEVELOPMENT				
ANNUAL GROWTH INDICATORS				
31 Population Growth Rate	1.5%	1.5%	0	
32 Housing Starts	80	80	0	
33 Retail Sale Growth (1974 \$)	\$240000	\$240000	0	
34 Employment (Jobs)	55	55	0	
REAL PROPERTY TAX FOREGONE				
\$ amt. % Grand (thous)* Levy				
35 Washington	\$7 : 0%	0	\$7 : 0%	
36 Roxbury	\$14 : 2%	0	\$14 : 2%	
37 Litchfield	\$1 : 0%	0	\$1 : 0%	
38 Morris	\$2 : 0%	0	\$2 : 0%	
39 Warren	\$2 : 1%	0	\$2 : 1%	
SOCIAL WELL-BEING				
RECREATION FACILITIES				
40 Visitor Center	0	0	0	
41 River Access Sites	9	6	3	
42 Roadside Parks	5	3	2	
43 Trails (miles)	17	8	9	
44 Swimming Sites	2	2	0	
45 Canoe Livery	1	1	0	
46 Riding Facilities	1	1	0	
47 Campgrounds	1	1	0	
RECREATION ACTIVITY				
48 Canoeing	Moderate	Moderate	0	
49 Fishing	Moderate	Moderate	0	
50 Hiking	Moderate	Moderate	0	
51 Swimming	Moderate	Moderate	0	
52 Pleasure Driving	Moderate	High	Favorable	
53 Picnicking	Moderate	High	Favorable	
CULTURAL RESOURCES *				
55 Educational Opportunities	mp	ne	Favorable	
56 Historic Sites	mp	ma	Favorable	
57 Archeologic Sites	hp	ma	Favorable	

NOTE

* hp - highly protective
 mp - moderately protective
 ne - no effect
 ma - moderately adverse
 ha - highly adverse

WILD & SCENIC RIVER COMPARISON TABLE: 6

OBJECTIVES	PLANS	WILD & SCENIC RIVER	ECONOMIC DEVELOPMENT	NET EFFECTS
<u>ENVIRONMENTAL QUALITY</u>				
<u>WATERWAY PROTECTION</u>				
1 Wild & Scenic River Miles		26 mi	0	26 mi
2 Streambelt		26 mi	0	26 mi
<u>VISUAL CORRIDOR PROTECTION</u>				
3 Wild & Scenic River Corridor		12500 ac	0	12500 ac
4 Town Ordinance		3000 ac	0	3000 ac
5 Inland Wetlands		1400 ac	1400 ac	0
6 Land Trust		1300 ac	1300 ac	0
7 State Ownership		350 ac	350 ac	0
8 Commercial Zoning		170 ac	170 ac	0
9 Low Density Zoning		12300 ac	9500 ac	2800 ac
10 Medium Density Zoning		0	2800 ac	-2800 ac
11 Estimated Scenic Easement		1700 ac	0	1700 ac
12 Estimated Public Use Easement		11 ac	0	11 ac
13 Estimated Fee Acquisition		27 ac	0	27 ac
<u>NATURAL PROCESS PROTECTION *</u>				
14 Geologic Processes		mp	ma	Favorable
15 Soil Stability		mp	ma	Favorable
16 Water Quality		hp	ha	Favorable
17 Vegetation Diversity		mp	ma	Favorable
18 Fish & Wildlife Habitat		mp	ha	Favorable
19 Rare & Endangered Species		mp	ma	Favorable
20 Air Quality		mp	ma	Favorable
21 Scenic Quality		mp	ma	Favorable
<u>ECONOMIC DEVELOPMENT</u>				
<u>DIRECT COSTS</u>				
22 Acquisition Costs (1975 \$)		\$986000	0	\$986000
23 Development Costs		\$15000	0	\$15000
24 Operations & Maint. Costs		\$23000/yr	0	23000/yr
<u>FOREGONE OPPORTUNITIES</u>				
25 Mineral Resources		360 ac-ft/yr	102 ac-ft/yr	258 ac-ft/yr
26 Forestry Resources		70 ac/yr	40 ac/yr	30 ac/yr
27 Agricultural Resources		85 ac/yr	80 ac/yr	5 ac/yr
28 Hydro-electric Power Capacity		625700 kw	0	625700 kw
29 Water Supply - Reservoir		143 bill. gal.	0	143 bill. gal.
30 Water Supply - Diversion		0	0	0
<u>REGIONAL DEVELOPMENT</u>				
<u>ANNUAL GROWTH INDICATORS</u>				
31 Population Growth Rate		1.5%	2.0%	-.5%
32 Housing Starts		80	105	-25
33 Retail Sale Growth (1974 \$)		\$240000	\$321000	-\$81000
34 Employment (Jobs)		55	135	-80
<u>REAL PROPERTY TAX FOREGONE</u>				
(\$ amt * % Grand (thous)* Levy)				
35 Washington		\$ 7 : 0%	0	\$ 7 : 0%
36 Roxbury		\$14 : 2%	0	\$14 : 2%
37 Litchfield		\$ 1 : 0%	0	\$ 1 : 0%
38 Morris		\$ 2 : 0%	0	\$ 2 : 0%
39 Warren		\$ 2 : 1%	0	\$ 2 : 1%
<u>SOCIAL WELL-BEING</u>				
<u>RECREATION FACILITIES</u>				
40 Visitor Center		0	0	0
41 River Access Sites		9	6	3
42 Roadside Parks		5	3	2
43 Trails (miles)		17	8	9
44 Swimming Sites		2	2	0
45 Canoe Livery		1	1	0
46 Riding Facilities		1	1	0
47 Campgrounds		1	1	0
<u>RECREATION ACTIVITY</u>				
48 Canoeing		Moderate	High	Favorable
49 Fishing		Moderate	High	Favorable
50 Hiking		Moderate	High	Favorable
51 Swimming		Moderate	High	Favorable
52 Pleasure Driving		Moderate	High	Favorable
53 Picnicking		Moderate	High	Favorable
<u>CULTURAL RESOURCES *</u>				
55 Educational Opportunities		mp	ne	Favorable
56 Historic Sites		mp	ma	Favorable
57 Archeologic Sites		hp	ma	Favorable

WILD & SCENIC RIVER COMPARISON TABLE: 7

OBJECTIVES	PLANS	WILD & SCENIC RIVER	ENVIRONMENTAL PROTECTION	NET EFFECTS
<u>ENVIRONMENTAL QUALITY</u>				
<u>WATERWAY PROTECTION</u>				
1 Wild & Scenic River Miles		26 mi	26 mi	0
2 Streambelt		26 mi	26 mi	0
<u>VISUAL CORRIDOR PROTECTION</u>				
3 Wild & Scenic River Corridor		12500	12500 ac	0
4 Town Ordinance		3000	3000 ac	0
5 Inland Wetlands		1400	1400 ac	0
6 Land Trust		1300	1300 ac	0
7 State Ownership		350 ac	350 ac	0
8 Commercial Zoning		170 ac	0	170 ac
9 Low Density Zoning		12300 ac	12500 ac	-200 ac
10 Medium Density Zoning		0	0	0
11 Estimated Scenic Easement		1700 ac	0	1700 ac
12 Estimated Public Use Easement		11 ac	0	11 ac
13 Estimated Fee Acquisition		27 ac	10850 ac	-10823 ac
<u>NATURAL PROCESS PROTECTION *</u>				
14 Geologic Processes		mp	hp	Unfavorable
15 Soil Stability		mp	hp	Unfavorable
16 Water Quality		hp	hp	0
17 Vegetation Diversity		mp	hp	Unfavorable
18 Fish & Wildlife Habitat		mp	hp	Unfavorable
19 Rare & Endangered Species		mp	hp	Unfavorable
20 Air Quality		mp	hp	Unfavorable
21 Scenic Quality		mp	hp	Unfavorable
<u>ECONOMIC DEVELOPMENT</u>				
<u>DIRECT COSTS</u>				
22 Acquisition Costs (1975 \$)		\$986000	\$19.5 million	\$ - 1.8 mil.
23 Development Costs		\$15000	\$113000	\$ - 98000
24 Operations & Maint. Costs		\$23000/yr	\$36000/yr	\$ - 13000/yr
<u>FOREGONE OPPORTUNITIES</u>				
25 Mineral Resources		360 ac-ft/yr	1050 ac-ft/yr	-690 ac-ft/yr
26 Forestry Resources		70 ac/yr	362 ac/yr	-292 ac/yr
27 Agricultural Resources		85 ac/yr	0	85 ac/yr
28 Hydro-electric Power Capacity		627500 kw	627500 kw	0
29 Water Supply - Reservoir		143 bill. gal	143 bill. gal	0
30 Water Supply - Diversion		0	0	0
<u>REGIONAL DEVELOPMENT</u>				
<u>ANNUAL GROWTH INDICATORS</u>				
31 Population Growth Rate		1.5%	1.5%	0
32 Housing Starts		80	80	0
33 Retail Sale Growth (1974 \$)		\$240000	\$240000	0
34 Employment (Jobs)		55	55	0
<u>REAL PROPERTY TAX FOREGONE</u>				
(\$ amt * % Grand (thous)* Levy)				
35 Washington		\$ 7 : 0%	\$162 : 13%	\$ -155 : -13%
36 Roxbury		\$14 : 2%	\$241 : 40%	\$ -227 : -38%
37 Litchfield		\$ 1 : 0%	\$ 25 : 1%	\$ -24 : -1%
38 Morris		\$ 2 : 0%	\$ 82 : 13%	\$ -80 : -13%
39 Warren		\$ 2 : 1%	\$ 12 : 4%	\$ -10 : -3%
<u>SOCIAL WELL-BEING</u>				
<u>RECREATION FACILITIES</u>				
40 Visitor Center		0	1	-1
41 River Access Sites		9	9	0
42 Roadside Parks		5	5	0
43 Trails (miles)		17	17	0
44 Swimming Sites		2	2	0
45 Canoe Livery		1	1	0
46 Riding Facilities		1	1	0
47 Campgrounds		1	1	0
<u>RECREATION ACTIVITY</u>				
48 Canoeing		Moderate	Moderate	0
49 Fishing		Moderate	Moderate	0
50 Hiking		Moderate	Moderate	0
51 Swimming		Moderate	Moderate	0
52 Pleasure Driving		Moderate	Moderate	0
53 Picnicking		Moderate	Moderate	0
<u>CULTURAL RESOURCES *</u>				
55 Educational Opportunities		mp	hp	Unfavorable
56 Historic Sites		mp	hp	Unfavorable
57 Archeologic Sites		hp	hp	0

NOTE

- * hp - highly protective
- mp - moderately protective
- ne - no effect
- ma - moderately adverse
- ha - highly adverse

APPENDIX B

FISH AND WILDLIFE OF THE SHEPAUG RIVER VALLEY

MAMMALS

Virginia Opossum (Didelphis marsupialis)
Common Mole (Scalopus aquaticus)
Hairy-Tailed Mole (Parascalops breweri)
Star-Nosed Mole (Condylura cristata)
Masked Shrew (Sorex cinereus)
Northern Water Shrew (Sorex palustris)
Shorttail Shrew (Blarina brevicauda)
Little Brown Bat (Myotis lucifugus)
Silver-Haired Bat (Lasionycteris noctivagans)
Eastern Pipistrelle (Pipistrellus subflavus)
Big Brown Bat (Eptesicus fuscus)
Red Bat (Lasiurus borealis)
Hoary Bat (Lasiurus cinereus)
Raccoon (Procyon lotor)
Shorttail Weasel (Mustela erminea)
Longtail Weasel (Mustela frenata)
Mink (Mustela vison)
Otter (Lutra canadensis)
Striped Skunk (Mephitis mephitis)
Red Fox (Vulpes fulva)
Gray Fox (Urocyon cinereoargenteus)
Bobcat (Lynx rufus)
Woodchuck (Marmota monax)
Eastern Chipmunk (Tamias striatus)
Red Squirrel (Tamiasciurus hudsonicus)
Eastern Gray Squirrel (Sciurus carolinensis)
Southern Flying Squirrel (Glaucomys volans)
Beaver (Castor canadensis)
White-Footed Mouse (Peromyscus leucopus)
Meadow Vole (Microtus pennsylvanicus)
Muskrat (Ondatra zibethicus)
House Mouse (Mus musculus)
Norway Rat (Rattus norvegicus)
Meadow Jumping Mouse (Zapus hudsonius)
Woodland Jumping Mouse (Nepaeozapus insignis)
Porcupine (Erethizon dorsatum)
Snowshoe Hare (Lepus americanus)
Cottontail (Sylvilagus floridanus)
New England Cottontail (Sylvilagus transitionalis)
White-Tailed Deer (Odocoileus virginianus)

BIRDS

Pied-Billed Grebe		Red-Bellied Woodpecker	"R"
Great Blue Heron	"R"	Yellow-Bellied Sapsucker	"R"
Green Heron	"X"	Hairy Woodpecker	"X"
American Bittern	"R"	Downy Woodpecker	"X"
Canada Goose	"X"	Eastern Kingbird	"X"
Mallard	"X"	Great Crested Flycatcher	"X"
Black Duck	"X"	Eastern Phoebe	"X"
Blue-Winged Teal		Alder Flycatcher	"X" & "R"
Wood Duck	"X"	Traill's Flycatcher	"X"
Ring-Necked Duck		Least Flycatcher	"X"
Common Goldeneye		Wood Eastern Pewee	"X"
Hooded Merganser		Olive-Sided Flycatcher	
Common Merganser		Horned Lark	"R"
Turkey Vulture	"X"	Tree Swallow	"X"
Goshawk	"X" & "R"	Bank Swallow	"X"
Sharp-Shinned Hawk	"R"	Rough-Winged Swallow	"X"
Cooper's Hawk	"R"	Barn Swallow	"X"
Red-Tailed Hawk	"X"	Cliff Swallow	"X" & "R"
Red-Shouldered Hawk	"R"	Purple Martin	"X" & "R"
Broad-Winged Hawk	"X"	Blue Jay	"X"
Marsh Hawk	"R"	Common Crow	"X"
Osprey	"R"	Black-Capped Chickadee	"X"
Peregrine Falcon	"R"	Tufted Titmouse	"X"
Sparrow Hawk	"X"	White-Breasted Nuthatch	"X"
Ruffed Grouse	"X"	Red-Breasted Nuthatch	"X"
Bobwhite	"X"	Brown Creeper	"X"
Ring-Necked Pheasant	"X"	House Wren	"X"
Turkey		Winter Wren	"X"
Virginia Rail	"X"	Long-Billed Marsh Wren	
Sora		Short-Billed Marsh Wren	"X" & "R"
Killdeer	"X"	Mockingbird	"X"
American Woodcock	"X"	Catbird	"X"
Common Snipe	"X"	Brown Thrasher	"X"
Spotted Sandpiper	"X"	Robin	"X"
Pectoral Sandpiper		Wood Thrush	"X"
Rock Dove	"X"	Hermit Thrush	
Mourning Dove	"X"	Swainson's Thrush	"R"
Yellow-Billed Cuckoo	"X"	Gray-Cheeked Thrush	
Black-Billed Cuckoo	"X"	Veery	"X"
Screech Owl	"X"	Eastern Bluebird	"X" & "R"
Great Horned Owl	"X"	Blue-Gray Gnatcatcher	"X"
Barred Owl	"X"	Golden-Crowned Kinglet	"R"
Saw-Whet Owl		Ruby-Crowned Kinglet	
Whip-Poor-Will	"X"	Cedar Waxwing	"X"
Common Nighthawk	"X"	Starling	"X"
Chimney Swift	"X"	White-Eyed Vireo	"X"
Ruby-Throated Hummingbird	"X"	Yellow-Throated Vireo	"X"
Belted Kingfisher	"X"	Solitary Vireo	
Yellow-Shafted Flicker	"X"	Red-Eyed Vireo	"X"
Pileated Woodpecker	"X"	Warbling Vireo	"X"

BIRDS (continued)

Black-and-White Warbler	"X"	Common Grackle	"X"
Worm-Eating Warbler		Brown-Headed Cowbird	"X"
Golden-Winged Warbler	"X"	Scarlet Tanager	"X"
Blue-Winged Warbler	"X"	Cardinal	"X"
Tennessee Warbler		Rose-Breasted Grosbeak	"X"
Nashville Warbler		Indigo Bunting	"X"
Parula Warbler	"X" & "R"	Dickcissel	
Yellow Warbler	"X"	Evening Grosbeak	"R"
Magnolia Warbler	"X" & "R"	Purple Finch	"X"
Cape May Warbler		House Finch	
Black-Throated Blue Warbler	"X"	Pine Grosbeak	
Myrtle Warbler	"X" & "R"	Common Redpoll	
Black-Throated Green Warbler	"X"	Pine Siskin	
Blackburnian Warbler	"X"	American Goldfinch	"X"
Chestnut-Sided Warbler	"X"	Red Crossbill	
Bay-Breasted Warbler		White-Winged Crossbill	
Blackpoll Warbler		Rufous-Sided Towhee	"X"
Pine Warbler	"R"	Savannah Sparrow	"R"
Prairie Warbler	"X"	Vesper Sparrow	"R"
Palm Warbler		Slate-Colored Junco	"X"
Ovenbird	"X"	Tree Sparrow	
Northern Waterthrush	"X"	Chipping Sparrow	"X"
Louisiana Waterthrush	"X"	Field Sparrow	"X"
Yellowthroat	"X"	White-Crowned Sparrow	
Yellow-Breasted Chat		White-Throated Sparrow	"X"
Hooded Warbler		Fox Sparrow	
Wilson's Warbler		Lincoln's Sparrow	
Canada Warbler	"X"	Swamp Sparrow	"X"
American Redstart	"X"	Song Sparrow	"X"
House Sparrow	"X"		
Bobolink	"X"		
Eastern Meadowlark	"X"		
Redwinged Blackbird	"X"		
Northern Oriole	"X"		

"X" = breeding

"R" = Listed in "Rare & Endangered Species
of Connecticut and Their Habitats".

LIST OF FISH SPECIES FROM SHEPAUG RIVER

	<u>ABUNDANCE</u>
Brown Trout (<u>Salmo trutta</u>)	Stocked
Brook Trout (<u>Salvelinus fontinalis</u>)	"
Rainbow Trout (<u>Salmo gairdneri</u>)	"
Redbreast Sunfish (<u>Lepomis auritus</u>)	Common
Pumpkinseed (<u>Lepomis gibbosus</u>)	"
Bluegill (<u>Lepomis macrochirus</u>)	"
Golden Shiner (<u>Notemigonus crysoleucas</u>)	"
Longnose Dace (<u>Rhinichthys cataractae</u>)	"
Tessellated Darter (<u>Etheostoma olmstedii</u>)	"
Smallmouth Bass (<u>Micropterus dolomieu</u>)	"
Blacknose Dace (<u>Rhinichthys atratulus</u>)	"
Fallfish (<u>Semotilus corporalis</u>)	Abundant
Creek Chub (<u>Semotilus atromaculatus</u>)	"
White Sucker (<u>Catostomus commersoni</u>)	"
Common Shiner (<u>Notropis cornutus</u>)	"
* Northern Pike (<u>Esox lucius</u>)	Introduced

* Most likely found in Bantam Lake and Lake Lillinonah.

APPENDIX C

SELECTED REFERENCES (keyed to footnotes in text)

1. Smith, Chard Powers, The Housatonic: Puritan River, Rinehart & Company, New York, 1946.
2. "Soil Survey of Litchfield County," U.S. Department of Agriculture in cooperation with the Connecticut Agricultural Experiment Station and the Storrs Agricultural Experiment Station, 1970.
3. "Northwestern Connecticut Iron Hills Heritage," Connecticut Department of Environmental Protection, September 1975.
4. "Kings Mark Resource Conservation and Development Plan," Kings Mark Executive Committee, sponsored by the Connecticut Department of Environmental Protection, 1976.
5. Howell, Kenneth T., and Carlson, Einar W., Empire Over the Dam, the Pequot Press, Chester, Connecticut, 1974.
6. Hull, Daniel R., "Bewitched Mine Hill," in cooperation with the Old Woodbury Historical Society, Pequot Press, Chester, Connecticut.
7. Written communication from Water Compliance Unit, Connecticut Department of Environmental Protection, March 1, 1977.
8. "Water Resources Inventory of Connecticut, Part 6, Upper Housatonic Basin," Connecticut Water Resources Bulletin No. 21, U.S. Geological Survey, 1972.
9. "Conceptual Report on the Shepaug River Diversion for Water Supply to Southwestern Connecticut," Roald Haested, Inc., Middlebury, Connecticut, 1976.
10. Rare and Endangered Species of Connecticut and Their Habitats, State Geological and Natural History Survey of Connecticut, Report of Investigations No. 6, the Natural Resources Center, Department of Environmental Protection, 1976.

CORRESPONDENCE RECEIVED



DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20250

July 10 1978

Honorable Cecil D. Andrus
Secretary of the Interior
Washington, D.C. 20240

Dear Mr. Secretary:

This is in reply to Assistant Secretary Herbst's March 22 letter requesting our views on your Department's proposed report on the Shepaug Wild and Scenic River Study.

In the resources section of the report, further discussion of the agriculture and forestry resources would be helpful to understanding the trade offs described in the Principles and Standards tables. For example, the report notes that most agriculture lands are prime farmlands and about 18 percent of the river corridor lands are currently used for agricultural purposes. However, the agricultural population and related industry are not discussed, nor is there any discussion on the possible effects of the proposal on the prime farmlands. All effort should be made to protect these unique and prime lands from unnecessary or irreversible conversion to other uses. Insofar as the discussion about Forest lands, the current situation is adequately portrayed. However, some background on the forestry potential to use as a yardstick in assessing the impacts of foregone opportunities would be helpful.

We agree with the study findings and conclusions that 26 miles of the Shepaug River meet the criteria for inclusion in the National Wild and Scenic River System. We also concur with your recommendation that protection and administration of the river area should be accomplished through local initiative. Through various cooperative programs in the Department of Agriculture, we will continue to provide assistance to State and local agencies in conservation planning for the river area if requested.

We appreciate the opportunity afforded us to offer our views on your proposed report.

Sincerely,

Bob Bergland
Secretary

UNITED STATES DEPARTMENT OF AGRICULTURE
1992 FOREST SERVICE

NORTHEASTERN AREA, STATE & PRIVATE FORESTRY
FOLWELL AVENUE
ST. PAUL, MINNESOTA 55108

3560
May 22, 1978



Mr. Bernard Fagin
U. S. Department of the Interior
Heritage Conservation and Recreation Service
Northeast Regional Office
Federal Building, Room 9310
4600 Arch Street
Philadelphia, Pennsylvania 19106

Dear Chick:

Here are my comments on the draft report of the Shepaug Wild & Scenic River Study. I believe you have already gotten some comments from Bob Knutson from Portsmouth and I will not repeat the comments that he has already given you. I believe the report is very well put together and what comments I have are of a rather minor nature.

Page 13, para. 4, last sentence--predominate should be changed to predominant.

Page 15, para. 3, last line--"indicated" is misspelled.

It would be helpful if the study rivers were identified on all of the maps. It is only in relation to the rivers that all of the other factors shown on maps are significant and for people not particularly familiar with the area or the study it may be difficult to identify the significant areas on some of the maps.

Page 39, para. 3--the figure of 2.4 cfs seems very low even though only about 29 percent of the watershed lies above this point. The figure may be correct but it occurred to me that it is possible that this should be 2.4 cubic feet per square mile of watershed. This would indicate a flow of about 91 cfs which is still a modest flow but seems somewhat more consistent with some of the other flow figures given in the report.

Page 44--the description of forest vegetation could be improved to make it conform to the standard practice of using the Latin generic name for plant species only on the first occasion in the text and thereafter in that same text using only the first initial of the generic name followed by the specific name. Thus the second sentence would read as follows: Characteristic dominants on well-drained soils include red oak (*Quercus rubra*), white oak (*Q. alba*),

black oak (*Q. velutina*), shagbark hickory (*Carya ovata*), pignut (*C. glabra*), and bitternut hickory (*C. cordiformis*).

Also in the next-to-the-last sentence the statement regarding white pine occurrence is misleading and seems to say that this is the southern limit of white pine. Perhaps what is meant is that white pine is not found further south in this northeastern hills ecoregion and that statement may very well be true. However white pine occurs naturally far south of Connecticut.

This about sums up my comments on the report and, as I said earlier, none of them are of any great consequence. Thank you for the opportunity to review the report and if you have any question give me a ring.

Sincerely,



NOEL K. SHELDON
Field Representative
Area Planning Staff



DEPARTMENT OF THE ARMY
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D.C. 20310

9 MAY 1978

Honorable Bob Herbst
Assistant Secretary of the Interior
Washington, D. C. 20240

Dear Mr. Herbst:

On behalf of Honorable Clifford Alexander, Jr., Secretary of the Army, I am pleased to respond to your letter of 22 March 1978 requesting our review of your draft report on the proposed Shepaug National Scenic River in Connecticut.

Our New England Division Office in Waltham, Massachusetts, participated in your Department's interagency task force on the Shepaug study. We find the report presents adequate knowledge and insight into previous water resource studies in the Shepaug River Basin. There are no conflicts between the report's findings and recommendations and any prevailing authority of the U. S. Army Corps of Engineers for the basin.

We appreciate the opportunity to comment on your draft report.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Blumenfeld", is positioned above the typed name.

Michael Blumenfeld
Deputy Under Secretary



Department of Energy
Washington, D.C. 20545

JUL 28 1978

Mr. Bernie Collin
U.S. Department of
the Interior
4th and G Streets, NW.
Pension Building - Room 335
Washington, D.C. 20240

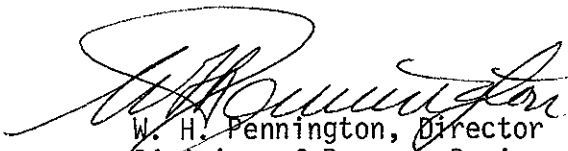
Dear Mr. Collin:

This is in response to Mr. Hunt's transmittal to Dr. Schlesinger requesting review and comment on the Department's draft report and environmental impact statement on the proposed Shepaug National Scenic River in Connecticut.

We have reviewed the report and statement and have determined that the proposed action will not conflict with current or known future Department of Energy programs. However, enclosed are staff comments which you may wish to consider in the preparation of the final report and statement.

Thank you for the opportunity to review and comment on this report and statement.

Sincerely,


W. H. Pennington, Director
Division of Program Review
and Coordination
Office of NEPA Affairs

Enclosure:
Staff Comments

STAFF COMMENTS
ON THE
DEPARTMENT OF THE INTERIOR'S
DRAFT REPORT AND ENVIRONMENTAL IMPACT STATEMENT
SHEPAUG WILD AND SCENIC RIVER STUDY

Page 2-6

Some discussion should be given in the summary section as to the loss of or impact on mineral values or the loss of some 637,000 Kw hydroelectric potential sites. It also does not discuss the impact on the local quality of life style.

Page 29

Mineral values are restricted to one sentence acknowledging the existence of garnet, staurolite, and kyanite, without a volume, value, or judgement. Garnets are a semiprecious gem stone and the deposits may have economic value. No assessment is made of the Mine Hill property or impact upon these values.

Page 40-41

Reference is made to potential hydroelectric power sites identified by the new York-New England Interagency Committee being adversely affected. Are these the same as those mentioned on Page 15 as sites owned by Connecticut Light and Power Company or are they in addition?

Page 48

A value on the lands affected or cost of the project would be useful. How will the 525 residences, 175 institutions, and 85 commercial sites be affected?

Page 49, Paragraph 4

Removing land for habitation in an area of limited building sites is not a readily acceptable solution to flooding.



United States Department of the Interior

BUREAU OF MINES

4800 FORBES AVENUE
PITTSBURGH, PENNSYLVANIA 15213

March 17, 1978

Memorandum

To : Maurice D. Arnold, Regional Director, Heritage Conservation
and Recreation Service, Northeast Regional Office, Philadelphia,
PA

From : Chief, Eastern Field Operations Center, Pittsburgh, PA

Subject: Review of Draft Report and Draft Environmental Statement,
Shepaug Wild and Scenic River, by Bureau of Outdoor Recreation

In response to the recent memorandum from Chick Fagan, we have reviewed the Draft Report and Draft Environmental Statement for the Shepaug Wild and Scenic River Study. We are pleased that two paragraphs (page 32, Draft Report and page 34, Draft Environmental Statement) have been included on mineral resources.

Our only objection is to the statement indicating that "figures are not available for the quantity of material being mined". A memorandum dated March 9, 1977, from C. Gordon Leaf to Chick Fagan included production figures in addition to other information. We do realize these figures are for Litchfield County, but are probably representative of the Shepaug Study area.

ROBERT D. THOMSON

Robert D. Thomson

cc: W. L. Dare, Washington



United States Department of the Interior

FISH AND WILDLIFE SERVICE

WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/ES/EC

JUN 23 1978

Memorandum

To: ~~Director, Heritage Conservation and Recreation Service~~
ACTING DEPUTY ASSOCIATE

From: Director, Fish and Wildlife Service

Subject: Shepaug River (Ct.) Wild and Scenic River Study -
Comment on Secretary's Proposed Report

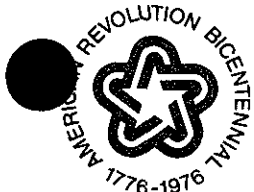
In response to the Secretarial letter of March 22, we offer several comments on the subject report as follows:

1. Recommendation No. 2 (Pages 5 and 59; discussion, page 57). This recommendation is based on selection of the local management alternative of administration of the Shepaug River as a component of the National Wild and Scenic Rivers System. Local management may well be superior to the other two alternatives--State management and combined State/local management--discussed on pages 57-59. However, this superiority is not borne out by the discussion on page 57. In our opinion, a stronger justification for recommending the combined State/local management alternative is given in the discussion on pages 58-59.

2. Fish and Wildlife--Mammals (Appendix B, page 85). We have no comment on presentation of data in the report on fish and wildlife resources, except that the scientific names of mammals listed in this appendix should be underscored, as they are for fish species on page 88.

Comments No. 3-6 below are editorial in nature and are made as suggestions to improve the readability of the report.

3. On the map, page 9, the Shepaug River should be labeled. Its location is difficult to determine without consulting another map for comparison of river locations.



4. East and West Branches (page 18, last paragraph, first line). To make easier the location of these branches of the Shepaug River, insert "(see map, page 28)" after the branch names.

5. Laws, Regulation (pages 62-63). The Inland Wetlands and Water Courses Act (second to last paragraph, page 62) and Public Act 490 (third paragraph, page 63) should, for clarification, be identified as Connecticut State laws if that be the case. The Inland Wetland and Flood Hazard Area regulations (second paragraph, page 63) should be associated with the law of similar title (page 62) if they are based on that statute.

6. King's Mark Environmental Review Team (third paragraph, page 69). The brief description of this team should also indicate the team's basic purpose and whether it is a private or governmental (town, State) organization.

We appreciate the opportunity for review and comment on the Shepaug River report.

R. K. Robinson



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

In Reply Refer To:
EGS-Mail Stop 441

June 14, 1978

Memorandum

To: Acting Chairman, Interdepartmental Study Group on Wild and Scenic Rivers

From: Thomas J. Buchanan, Geological Survey

Subject: Draft Report--Shepaug Wild and Scenic River Study

The Department's draft report on the proposed Shepaug National Scenic River in Connecticut has been reviewed by personnel in our District Office in Hartford, Connecticut. Our reviewer feels that those portions of the draft report dealing with hydrology are complete and accurate. Thank you for giving us an opportunity to review this report.

Thomas J. Buchanan /sl

Thomas J. Buchanan



United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:
L76(560)

May 24, 1978

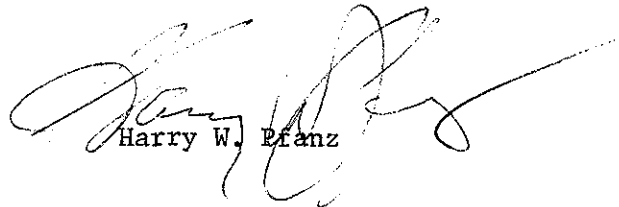
Memorandum

To: Assistant Director, Planning and Development

From: Acting Chief, Cultural Resources Management Division

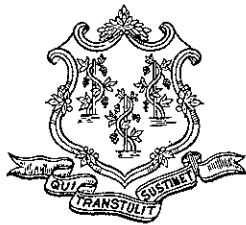
Subject: Review of Shepaug Wild and Scenic River Report

No comment.


Harry W. Pfanz

Enclosure
Subject Report

ELLA GRASSO
GOVERNOR



STATE OF CONNECTICUT
EXECUTIVE CHAMBERS
HARTFORD

May 4, 1978

Mr. Robert Herbst
Assistant Secretary of the Interior
U.S. Department of the Interior
Office of the Secretary
Washington, D.C. 20240

Dear Mr. Herbst:

Thank you for sending me a copy of the draft report "Shepaug Wild & Scenic River Study" for review.

I believe that this is a very desirable undertaking to evaluate methods of preserving one of the most beautiful and unique portions of Connecticut. Therefore, I have asked my staff and the Department of Environmental Protection to review the study in terms of its policy implications. I have been advised that the main thrust of the report is to recommend its preservation primarily under local auspices such as an inter-town compact or commission. Since I support both of these recommendations, I am happy to endorse this proposal.

Again, thank you for the opportunity to review and comment on this report.

With best wishes,

Cordially,

Ella Grasso
ELLA GRASSO
Governor